Echo Ireland

Irish Radio Transmitters Society

March 2015 - 83 Years

Craggy Island DXpedition Group at their annual pilgrimage to the "Fr. Ted" Parochial House
EI2GP, EI5DD, EI7GMB, EI1EM

At the Phoenix Radio Club Rally, 15th February 2015 - EI3GV, EI4GLB, Johnnie (SWL), EI4GIB, EI5DI

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Ken O'Brien EI9EL
Lisa Cummins EI9GSB

News from the Clubs

Mayo Radio Experimenters Network

Padraic Baynes EI9JA

MREN started of the New Year 2015 by participating in the annual 80m counties contest which is held every year on New Year's Day, as planned at our December meeting.

The weather was atrocious and the decision to go was left to the last hour, when the rain and storm eased off a little. We travelled light and only brought a few short telescopic poles to hold up the dipole. A bench was struck together for the back of the van and a few stools were thrown in to sit on. Domnic EI9JS, Jimmy EI2GCB, and I EI9JA all arrived together at our usual site near Ballyvary, four miles from Castlebar, about half hour before the contest started.

The rain and wind had returned to dampen the spirit, we struggled to raise the mast and the stays were at full stretch to hold it aloft for the duration of the contest. To add to our hardship the clubs generator refused to start! We were lucky Domnic EI9JS had brought along his generator should we have such difficulties on the day.

When we finally got on air conditions were good, the band were congested with contestants so we spent a while answering stations until we worked nearly all the calling stations.

Jimmy EI2GCB was on the mic while Domnic EI9JS contented himself with the logging, I had the job of making the tea. Jimmy found a clear frequency and started calling. As time progressed the weather deteriorated and the skip drowned out the EI's. By 17.00 UTC darkness had fallen, we ended gathering up the equipment with flashlights, lashed with rain and wind, soaked to the skin, at times we asked ourselves were we mad being out in these conditions?

We entered the SSB/P-only section as EI0M/P; despite the conditions we had fifty nine QSOs and twenty five counties. I suppose we could say we had a good result. No other portable station was worked or heard on the day.

This year we are planning to do more portable field days and hope some more of our members participate in the fun. Looking forward to the year ahead!

Shannon Basin Radio Club

Brian Canning EI8IU

The Shannon Basin Radio Club held its AGM in Roscommon on the 16th Jan last. The following officers were elected: Chairman; Pat EI9HX, Secretary; Brian I8IU, Treasurers; Fergus EI6IB & Brian EI8IU, QSL Manager; Anthony EI6GGB, Contest Manager; Mark EI6JK, Webmaster; Anthony EI6GGB.

Back Row: Enda EI2II, Richard EI5GUB, Gerry EI9DZ, Pat EI9HX, Fergus EI6IB. Front: Mark EI6JK, Fr. Niall EI4CF, Brian EI8IU, Anthony EI6GGB.

The Club would like to thank the outgoing committee for all their hard work and commitment.

South Eastern Amateur Radio Group

Sean Byrne EI2HZB

The Group continues to have a 2m net on Tuesday nights after the IRTS weekly news has finished - to promote the use of this band which has seen a decline in use. The intended frequency is 145.400MHz. The net has had good call-ins since its introduction and everyone is welcome to join in.

Follow SEARG on Twitter and on Facebook.www.searg.com

Fingal Radio Club

Dermot Miley EI2HD

Fingal Radio Club EI2FRC and Dermot EI2HD are continuing their 2m call-in on Wednesday nights at 7pm. Please try to support them in their efforts to reactivate this band. The frequency is 145.7625 with a CTCSS of 88.5kHz on the Dublin Repeater.

IRTS Region4 Radio Theory Classes

Radio Theory Classes in preparation for the next Amateur Station licence examination will be held in Limerick depending on numbers. Anyone interested in attending should contact Ger McNamara, EI4GXB via email on ei4gxb@gmail.com or 061-354922/087-2532512.

South Dublin Radio Club

John Breen EI7BV

SDR Net - On the Move
The South Dublin Radio Club Net (SDR Net), which has been operating for over two years on 40 meters on Sunday mornings following the IRTS 40m News, is on the move. It will now be on 7.123MHz +/- QRM and will run from 10 am to 11 am, prior to the 40m news.

All EIs are welcome to call in. We hope this change will permit other EIs, especially those waiting for the News , to join in and help expand both the coverage and participation in the Net.

Recent Talks
Daniel Cussen EI9FHB gave a very interesting demonstration of a small satellite tracking system for ARISS HamTV. Unlike the majority of rotator systems which operate in azimuth and elevation his system operates in the X-Y plane. This allows easier tracking of a satellite that goes directly overhead. A suitable software driver is needed to convert the normal polar co-ordinates to X-Y co-ordinates.

Daniel EI9FHB demonstrates his X-Y antenna mount

Terry Thomas ZL4TAE visited the Club. Terry is a council member of NZARTS and a keen VHF enthusiast. He gave a talk on VHF operation in ZL. Terry has great enthusiasm for VHF portable operation and explained how he was able to contact VK. It is a different world in the Antipodes where the nearest landmass can be over a thousand kilometres away.

Tom EI7HT with Terry ZL4TAE at SDR

Youngsters On The Air (YOTA) 2015

Ger McNamara EI4GXB

Youngsters On The Air (YOTA), operating under the aegis of IARU, is a group of young people who are interested in amateur radio and mostly under the age of 25. Each year they get together at a summer event in a different European country to learn about different aspects of amateur radio, try out their skills at construction and operating and spend some quality time together. A great mix of learning as well as fun and games!

Each IARU member society is invited to send a team, consisting of a maximum of five persons, four aged from 15–25 years plus one team leader. There is however an overall limit of seventy-five participants.

IRTS members have attended YOTA summer events in 2012 (Belgium) and in 2013 (Estonia). Participants were involved in construction projects, antenna building, operating including contests, workshops, direction finding ("foxhunting") and plenty more.

Summer Event 2015
The 5th Youngsters On The Air summer event will take place in Marina di Massa, Tuscany, Italy, organized by ARI (Associazione Radioamatori Italiani), from 18th to 25th July 2015.

The cost of accommodation and food is met by the IARU, while the flight costs is normally covered by the national society. Incidental costs and spending money must be met by the participants.

IRTS sought expressions of interest from IRTS members (or sons/daughters of IRTS members) in the age group 15–25 who wished to attend the event in Italy via an expression of interest process announced on Facebook and the weekly Radio News.

Expressions of interest included the following information:

- Full name and age
- Call sign (if licensed)
- Details of radio club membership (if applicable)
- Experience in amateur radio, including participation in family or club activities
- Other pertinent experience (e.g. scouting or similar leadership experience)
- Any other attributes or abilities deemed relevant

The 2015 event is proving very popular and has been oversubscribed, with ninety four applicants. To ensure that a maximum number of countries could take part individual team numbers were limited, and there will be seventy five participants from twenty one countries. IRTS has been allocated two team members and one team leader.

A full report on the IRTS participation at YOTA 2015 will be included in a future edition of Echo Ireland.

See www.ham-yota.com for more information on YOTA.

South Eastern Amateur Radio Group AGM 2015

Seán Byrne EIHZB

The AGM of the South Eastern Amateur Radio Group took place on Monday 23rd February. Club Chairman Dennis EI2HSB thanked all present for attending and gave a report on the highly successful year that 2014 was for the club. Club secretary David EI6GVB listed all the activities that the club had taken part in during the year and following that Club Treasurer Mark EI7IS gave a report on the finances of the club.

Dennis thanked the outgoing committee for their hard work throughout 2014 and the following committee was deemed elected for 2015 from all those present:

Chairperson	Dennis Drennan EI2HSB
Vice Chairperson	John Tubbritt EI3HQB
Secretary	David Gainda EI6GVB
Treasurer	Mark Wall EI7IS
Public Relations Officer	Sean Byrne EI2HZB
Club Officer 1	John Ronan EI7IG
Club Officer 2	Raymond Cowman
Club Officer 3	Eoghan Kinane EI5HBB

SEARG Committee for 2015 from left to right: Mark EI7IS, Sean EI2HZB, John EI3HQB, David EI6GVB, Raymond, John EI7IG, Eoghan EI5HBB & Dennis EI2HSB

SEARG members at the club's 2015 AGM

Lusitania Radio Club

EI100MFA is a special-event station to mark the 100th anniversary of the sinking of the Lusitania on 7th May 1915. The station will operate from the 6th to the 10th May 2015 from a site in or near the Old Head of Kinsale Lighthouse in Co Cork.

The club is looking for assistance in running and operating this event. Please contact us at *LRC100@email.com*

Time to Return IRTS Trophies

Awards Curator Peter Grant EI4HX
ei4hxperimental@eircom.net

It's time to return all the trophies and cups!

Items can be given to any IRTS committee member by March 25th, or if more convenient returned to the IRTS stand at the Limerick Rally on March 29th, to allow time for cleaning, repairs and engraving.

EI150ITU

This call has been issued to IRTS to commemorate the 150th anniversary of the founding of the International Tele-communication Union (ITU) in 1865.

It is available for use by licensed IRTS members in EI. Dave O'Connor EI6AL will coordinate applications to prevent any clash of times, bands or modes. The call sign must be used in compliance with all relevant ComReg regulations and licence conditions.

Users must email a copy of their log, in ADIF format, to EI6AL who will maintain a central log for QSLs.

Contact EI6AL at *dave.ei6al@gmail.com* or 086 100 0000

Lough Erne Amateur Radio Club Rally

Sunday 10th May 2015 - 11.30am - *www.learc.eu*

Ireland's big summertime amateur radio rally will be held in the spacious Arena at the SHARE Centre, BT92 0EQ, near Lisnaskea on the east shore of Upper Lough Erne. It is the only rally in Ireland to which you can go by boat or by road.

Being early summer, other family facilities to enjoy include caravan and camping, lough cruises, sailing and canoeing and lots more ashore that SHARE can offer. Make a family weekend of it.

Exhibitors and Traders seeking to display anything and everything that might be of amateur radio or similar interest are invited to contact LEARC Club Chairman, Michael MI5MTC *mi5mtc@learc.eu* 048 6862 1436 or 0044 79 2241 1442

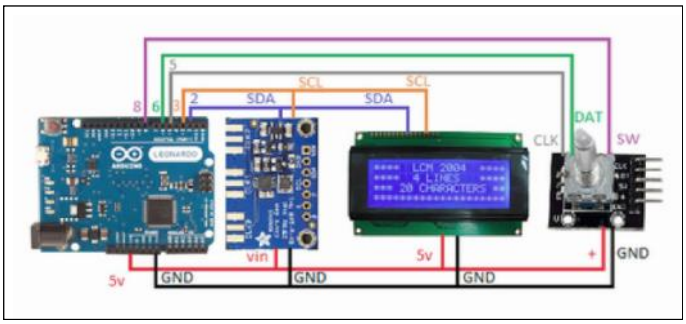
For intending visitors travelling on the Donegal bus from Dublin, collection can be arranged at Derrylin - contact Michael.

A Signal Generator using the Adafruit SI5351

Gerry Kavanagh EI8DRB - gerryk.com

This article describes the design and construction of a signal generator using both Arduino and Digital Frequency Synthesis technology. The RF generator covering 8kHz - 150MHz and giving a non amplitude-calibrated output which may be used in design of resonant circuits such as filters and networks.

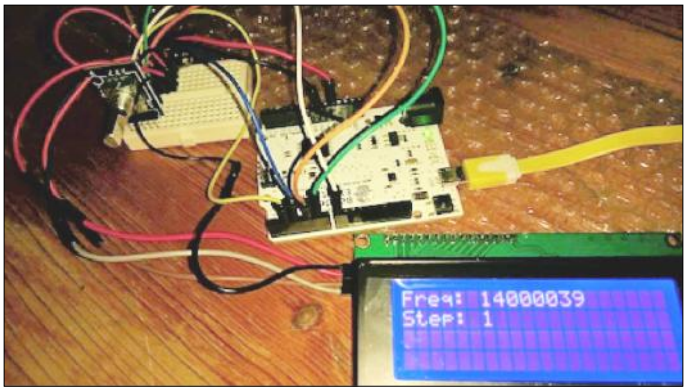
The DDS and related clock generation circuitry for the signal generator has been made possible by the use of high accuracy, broad-banded programmable VFO for very little money. Analogue Devices AD9850[1] series offer HF



frequencies for about €5. Higher frequencies can be had for not much more money, with the Silicon Labs SI570 with its near GHz maximum frequency offering the highest. I recently came across an interesting little device from Adafruit[2]. Again, from Silicon Labs, the SI5351 offers 3 independent clock outputs from a single 25MHz reference, programmable via I2C, a maximum frequency of 160MHz and all for less than €10 shipped. I had to have one.

The order, along with some of the other wonderful goodies from Adafruit arrived soon enough, and I got to work, first off getting the encoder knob working. The plan was to have a rotary encoder with push button for setting the frequency, an I2C LCD for display and the clockgen, all hanging off an Arduino - in this case, a Leonardo clone.

The sample code I first tried for the encoder worked ok, but then I found the built-in 'encoder' library, and tried that which



was far better and there was no messing with interrupts. Next I tried to get the display working with no joy using the standard LiquidCrystal_I2C library. I then ran an I2C scanner[3] to find out if perhaps the device had a different address from standard. This gave me a 'no devices' error... something was wrong. After a bit more research, I discovered that the pins used for I2C on the Leo are not the same as on the Uno. *The Uno uses Analog Pins 5 and 6, whereas the Leo uses Digital Pins 2 and 3*. I reran the scanner, and it immediately detected the display on 0x27 and the clockgen on 0x60. I plugged the address into some display testing code and had my display!

I then added in a few lines to include the Adafruit SI5351 library and program one of the clocks to output 14Hz. I had my AOR8200 MkIII to hand, tuned to 14MHz AM so I hoped to be able to hear the clock on the AOR receiver. Nothing, however. After a bit more reading I came across another library for the SI5351[4], this one managing to avoid all the divider/multiplier calculations necessary with the Adafruit library. I modified the code once again to include this, and instead of doing any calculations, just wrote the required frequency directly to the clock. This time, I could hear a tone on the receiver. As I turned the encoder, the frequency on the display changed, and I could hear the tone get slightly higher in pitch - success by any measure!

It only remains to case this and use it to align a few projects.

References

[1]*http://www.analog.com/en/rfif-components/direct-digital-synthesis-dds/ad9850/products/product.html*
[2]*https://learn.adafruit.com/adafruit-si5351-clock-generator-breakout/overview*
[3]*http://playground.arduino.cc/Main/I2cScanner*
[4]*https://github.com/etherkit/Si5351Arduino*

What is Arduino

"Arduino is a mash-up of open source technologies," according to Massimo Banzi, one of its creators in 2005. It can be described as a tool for making computers that have a practical application in controlling more of the physical world than any desktop computer.

The benefits of Arduino are that is simplifies the process of working with microcomputers and offers a greater flexibility over other systems to teachers, students and the ardent interested electronic amateurs. Arduino is inexpensive compared to other microcontrollers. It is cross-platform in that it can be used on Mac OSX, Windows and Linux extensible operating systems. The software is open-sourced, and is a great way to learn C++ or AVR C programming. The Arduino starter kit is available online from Irish suppliers.

There are extensive resources available online about Arduino and many make reference to using Arduino in amateur radio projects. The main website is www.arduino.cc. Check out YouTube or Google 'Arduino ADK' to get information on the Accessory Development Kit and how to use it with Android devices. Arduino Day is March 29th 2015.

Code

```
#include <Wire.h>
     #include <LiquidCrystal_I2C.h>
     #include <Encoder.h>
     #include "si5351.h"

     Si5351 clockgen;

     const int BUTTON = 8;
     long oldPosition = -999;
     long int step = 1;
     long int frequency = 14000000;

     Encoder myEnc(5, 6);
     LiquidCrystal_I2C lcd(0x27,20,4); //set the LCD address to 0x27 for a 16 chars
                                  and 2 line display

     void setup () {
          lcd.init();
          lcd.backlight();
          lcd.setCursor(0, 0);
          lcd.print("Initialising...");
          clockgen.init(SI5351_CRYSTAL_LOAD_8PF);
          lcd.setCursor(0, 1);
          lcd.print("OK!");
          delay (2000);
          pinMode (BUTTON, INPUT);
          digitalWrite (BUTTON, HIGH); // Pull High Restance
          lcd.init();
          lcd.backlight();
          lcd.setCursor(0, 0);
          lcd.print("Freq: ");
          lcd.setCursor(6, 0);
          lcd.print(frequency);
          lcd.setCursor(0, 1);
          lcd.print("Step: ");
          lcd.setCursor(6, 1);
          lcd.print(step);
          // Set CLK0 to output 14 MHz with a fixed PLL frequency
          clockgen.set_pll(SI5351_PLL_FIXED, SI5351_PLLA);
          clockgen.set_freq(frequency, SI5351_PLL_FIXED, SI5351_CLK0);
     }

     void loop () {
          int delta;
          if (!(digitalRead(BUTTON))) {
               if (step >= 1000000)
                    step = 1;
               else step = step * 10;
               lcd.setCursor(6, 1);
               lcd.print(step);
               lcd.setCursor(6+(step/10),1);
               lcd.print(" ");
               delay (200);
          }
          long newPosition = myEnc.read();
          if (newPosition != oldPosition) {
               delta = newPosition > oldPosition? 1 : -1;
               oldPosition = newPosition;
               frequency = frequency + (delta * step);
               lcd.setCursor(6, 0);
               lcd.print(frequency);
               clockgen.set_freq(frequency, SI5351_PLL_FIXED, SI5351_CLK0);
          }
     }
```

Software for Digital modes - A Review

Hugh Bradley EI9KF

A number of computer programs have been written for Amateur Radio Digital Mode operation. These operate in conjunction with conventional HF SSB radio transceivers, and usually use the PC sound card as the means of input and output to and from the radio. The sound card of a PC is a cheap effective analogue-to-digital converter. Some programs allow for the use of an external TNC or multifunction controller (ie Kantonics or SCS PTC) as an interface between radio and computer. Digital modes use audio-frequency signals which are modulated in various ways according to the mode. The computer and software link to the transceiver also by a serial port connection (CAT) which allows the program some control of the radio .
Much of the software available is multi-mode, which means that they are able to operate many popular digital modes (e.g., DominoEX, MFSK16, PSK31, and RTTY) though not all are equal in this regard.

It can be difficult to identify some of the more obscure modes which appear on the amateur bands. Some digital software packages include the Reed Solomon ID protocol that sends a two second code before each text transmission informing the software at the other end what mode is being used to send the message and the center frequency for the transmission. At this time Fldigi, Digital Master 780 v5, and MultiPSK all implement this protocol.

Generally these programs have similar interfaces which include the following general features:

A Receive Pane
Text from decoded incoming signals is displayed here. When you transmit, the transmitted text is also displayed here, making a record of the QSO.
A Transmit Pane
Here is where you type what you want to transmit. Pressing a macro button will enter text into this pane.
A Waterfall Pane
This is the main tuning facility. The signals coming in can be seen, selected and tuned to. The type of signal being received can often be identified by its fingerprint on the waterfall.
A set of Macro buttons
These programmable buttons enable blocks of text to be entered into the transmit window. Text can include predefined fields (i.e. call-sign, name etc)
Other controls and functions may also be offered.

Choosing a program
How do we choose between the programs available for operating digital modes? All programs perform operations under the surface that affect how signals are decoded etc. I don't believe that there is much to choose between programs in this regard unless the operator is very technically minded and anxious to have control over all the parameters of the signal processing. Of more relevance, particularly to the novice user, is the program's user interface that determines just how easy the program is to use.

The following issues are of relevance when choosing a program to use for digital modes :
- Does it have an attractive easy to use interface?
- Are the controls intuitive?
- Ease of signal identification and ease of selection.
- Multiple signal decoding (like CW Skimmer).
- Who is the caller? Have I worked them before? Have I worked this entity on this mode or band? Is this information readily available?
- How easy is it to get the caller and QSO details into the log?
- Integral QSO logging in a compatible format included?
- What modes are handled by a program?
- Easy switching between modes?
- Ample macro buttons that are easily identifiable and grouped
- How big a footprint does the program make on the screen? How much space does it take up in relation to what I have available?

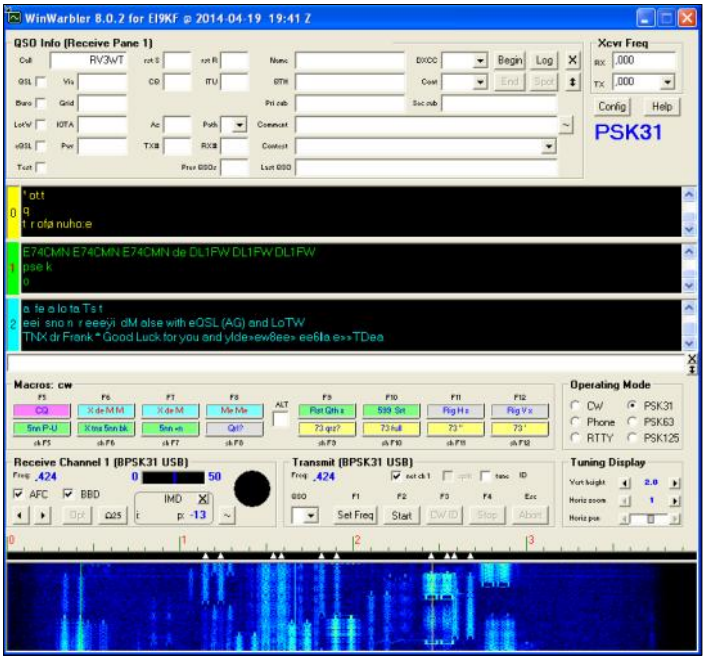
The following programs are reviewed

WinWarbler
HRD Digital Master (DM780)
Digipan
Fldigi
MixW
MultiPSK

WinWarbler
General
Part of the DXLab suite of programs and has thus the advantage of a comprehensive logging program (DX Keeper) as well as a spotting (DX Spotter) module and a transceiver controlling module (DX Commander). The DXLab suite is a free package made up of 8 separate modules which can be downloaded individually. While they are designed to 'talk' to each other and integrate together, each module will function on its own.
Standard interface with the Call detail on the top of the window, RX and TX windows in the middle with a waterfall at the bottom.
The program offers the user three independent receive windows which can simultaneously decode incoming signals. For RTTY the windows can be customized to receive from different sources offering diversity in receive mode. A TNC / modem can feed one window with the soundcard feeding the second. Winwarbler can be configured to operate with a TNC/Modem for compatible modes.

Logging
Because WinWarbler is part of the DXLab suite it can feed its contacts automatically to the logging program DxKeeper. This will sniff out duplicates and provide DX information etc. It will also work stand alone recording a 'mini-log' which can be readily imported/exported.

Macros
The programs provides for 2 sets of 16 macros for each



mode. It is not appropriate to use the same words or text in an exchange in every mode. For example, CW and RTTY typically use abbreviated text while PSK and Olivia use full words and are more verbose. Changing the mode in use requires the use of different macro sets. WinWarbler automatically selects the appropriate set of text macros for the mode selected. This package offers an unsurpassed range of fields that can be inserted into macros. The Macro buttons can be made coloured and the text can be independently coloured. This facilitates grouping macros neatly for the Runner and the Pouncer. None of the other packages tested shares this useful feature. The second group of 16 macros available in a given mode can be selected very easily by ticking a small box. The Macro aspect of this package is about the best and easiest to use that there is. Set up of the macros is easy and hovering the cursor over a button shows you what the macro is about to say before you press it.

Modes
WinWarbler works for all the most commonly used modes: CW, PSK31, PSK63, PSK125 and RTTY but nothing more than this. It will not decode MT63, Olivia, JT65, Throb, Pactor, etc.

Rig Control
WinWarbler links seamless with the Commander module of the DXLab suite. This module provides compatible CAT control of most available transceivers.

Receiving
In RX, a signal on the waterfall is clicked and decode will start in the appropriate pane. Three panes can work simultaneously. One must click as close to middle of the signal as possible. In Fldigi and Digital Master and to a lesser extend in MixW, (discussed later) the cursor represents the bandwidth of the signal and this makes for ease of selection. Winwarbler, however requires one to enter a single point . WW can open a window which will display up to 47 simultaneous decoded signals reminiscent of CW skimmer. Any one of the signals being decoded can be passed over to the main window by clicking on it.
Transmitting
Given that there are three RX windows, WW will transmit on the same frequency as the call being received. The other two windows can be hidden or restored easily without losing any streamed data. If required a frequency can be specified for QSY and this will be used for all TX if operating split.

Cost
The program is available free-of-charge and updates are provided regularly.

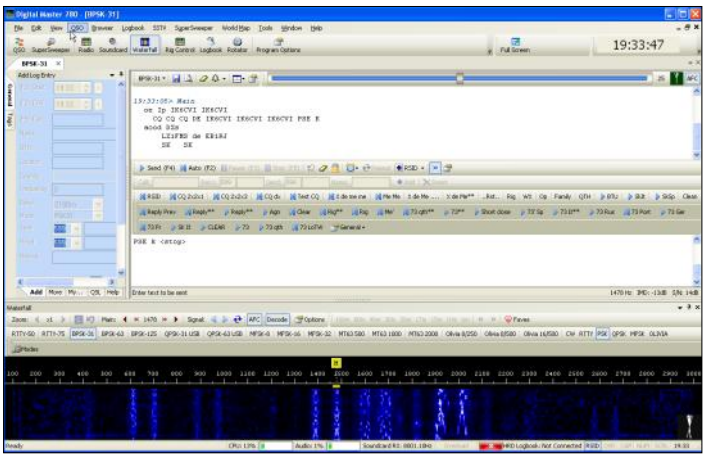
Likes
A very capable and useful program which fully integrates with an excellent suite of DX modules. The program of choice for CW, PSK and RTTY if using a TNC/Modem or multimode controller. I like the way that it offers decode of three signals windows at once and that it also offers a 'panoramic ' mode - decoding all the signals within the band window at the same time. Clicking one will take it into one of the communication windows.

Dislikes
Selecting a signal on the waterfall is not as nice as with DM780, Fldigi or MixW I don't like having the three communication windows and I generally close down two of them. The program takes up a lot of space on the screen particularly if the control (Commander) and logging (DXKeeper) components are factored in .

Digital Master (DM780)
This program is part of the Ham Radio Deluxe (HRD) suite of programs. Of all the programs reviewed here this is the most impressive in terms of its attractive user interface. As part of the HRD suite, this digital mode program relies on HRD Logbook to do all its logging and recording functions. The program's link with HRD provides it with information from the transceiver - frequency, mode etc. Likewise, DM can control the transceiver through the interface of HRD .

Logging
This is carried out seamlessly with HRD. On right-clicking a Call in the receive window, there is instant access to info on duplication or past QSOs etc. This is a good easy-to-use feature. A code can be inserted in the programs macros to instruct a QSO to be started and saved in the log. Useful when you are in a hurry.

Macros
Macros are customizable for all modes. Passing the cursor over a macro button reveals the text. The buttons cannot be



coloured but they can be arranged in groups according to functions (CQ / Reply/ Goodbye etc). Macro sets created for different modes will auto-select when the mode is changed.

Modes
DM handles most of the digital modes available with the exception of Pactor I, II and III. DM is not able to operate using a TNC/Modem but takes all its input from the soundcard. It can decode just one mode at a time in its single window. A 'panoramic' option exists enabling the text of multiple decoded signals to be displayed on a band-map. Clicking on one of these will place the QSO on the main receive pane and enter the call details into log section. DM offers Olivia as a mode.

Rig Control
Rig control is effectively done using the Ham Radio Deluxe CAT control. It is also possible to use the Commander module of DXLabs using an additional external free program. This means that DM780 can integrate with the DXLabs suite and be used in place of WinWarbler, a less capable program.

Receiving
In RX the mouse controls a pair of movable parallel vertical lines on the waterfall. These lines represent the bandwidth of the signal of the mode being used. This tuning feature is very useful making it easy to select a signal and also to identify what it is. (e.g. a PSK-63 signal is easily identified.) Right-clicking on incoming information very easily populates the QSO fields. Ease of use is a big feature here. Interestingly, the program does not identify a call unless you right-click on it. MixW on the other hand spots a call sign in the middle of a batch of text instantly and highlights it. In DM780, right-clicking on a signal in the waterfall gives an instant reading at the mouse pointer of the decoded transmission at that spot. DM has a useful feature called Super Sweeper which, like CW Skimmer, allows all the signals on a band to be decoded simultaneously. (Fldigi, Multipsk and Winwarbler have a similar 'panoramic' feature)

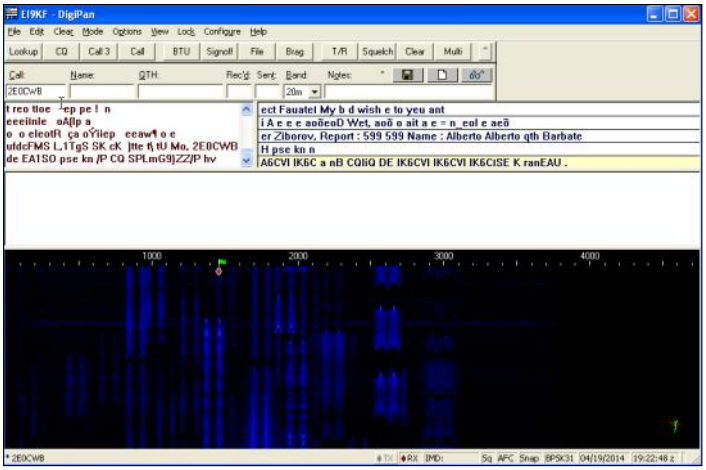
Transmitting
DM offers a feature whereby the TX frequency can be locked enabling one to operate split. This feature is activated by pressing the small Lock icon on the TX menu bar.

Cost
DM780 comes as part of the Ham Radio Deluxe suite 6.0. This has a cost of $90.00. Older versions of HRD are available and can be downloaded and used free of charge. .

Likes
Ease of use. Selection of mode and picking out a signal from the waterfall is easy. Logging the call info is very straight-forward. I like the way that when I hover the mouse over the call of a station currently on my receive screen, I am shown instantly if I have previously worked them, if this entity is needed and on what band/mode.
DM 780 will integrate with other logging programs such as the DXLab suite. An additional module is available for download that provides the link. Macros can be grouped easily and an almost infinite number can be used. The program can be told which phrases to use for which mode. In other words, for each mode (psk31, RTTY, Olivia etc), a different set of predefined macros is made available.
When used with the HRD suite, call lookup is automatic.

Dislikes
The logging program HRD Log which needs to be run simultaneously is cumbersome and difficult to share a screen with. The HRD radio control program need to be running also in the background. Setting up macros is not very intuitive. DM780 will not work with an external multimode device or TNC. It takes up a lot of screen space, even with the logging and control modules of HRD minimized.

DIGIPAN
DigiPan stands for "Digital Panoramic Tuning". This was the original program that opened up PSK31 to the masses. It introduced the waterfall and a whole new way of visualising, tuning and selecting signals. The program is compact and has its own logging facility. Logs can be exported in a compatible format to other logging programs. The package links with QRZ.com for call sign lookup. The program is free to download and use. Since its introduction, other programs have been written to develop and improve on Digipan.



Macros
2 banks of 12 macro buttons are available for customisation. These are grouped in three sets of four but cannot be coloured and mouse-over doesn't show the contents.

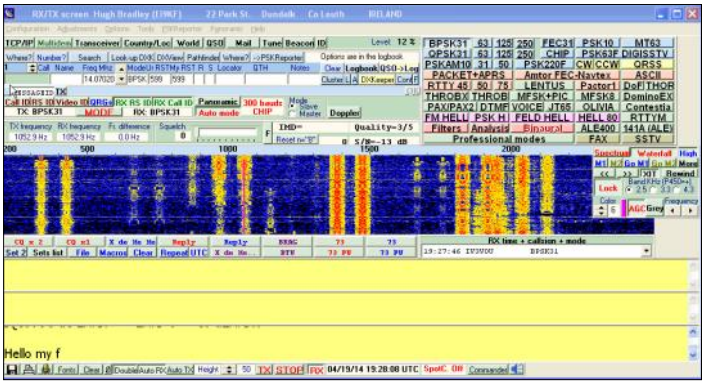
Modes
Modes are very limited. DigiPan offers only PSK31 and 63 and limited FSK.

Rig Control
If you are trying to achieve PTT with DigiPan and CAT, be aware that DigiPan does not support PTT by CAT command.

Likes
Simple interface, easy to set up, small footprint and easy to use.

Dislikes
I believe that while the program functions well, it has been surpassed in sophistication and functionality by more recent programs such as Fldigi, MixW and DM780

MultiPSK
General.
This program is the most eccentric of the bunch. It is written by F6CTE though there is little trace of any stylish Gallic touches. It is freeware for the basic version but costs €30.00 for the full version.



When you first install and run this program your first instinct is to cut and run. Get me outta here! The graphic interface is appalling. However, the longer that you spend with this gem of a program, the more surprised you will become by its huge ability. This program is out on its own for the sheer variety of modes that it will decode . It even has its very own JT65 interface. The quirky nature of the interface can grow on you once you have dedicated a bit of time to get into this excellent program.

Logging
MultiPSK links very nicely with the DX-Lab suite of programs. The interface is seamless and very effective. DX-Keeper does all the logging functions needed. It will also link with Ham Radio Deluxe.

Macros
The program provides for a plethora of Macro sets . The down side is that the number of fields that can be inserted into the macros is quite limited though is certainly adequate for general day to day DXing and contesting. Compared to the vast range of insertable fields and commands available in MixW and WinWarbler, the number available here is limited though not in my view limiting. The macro buttons are tiny, ugly and not very customizable -but they work. Changing the mode automatically selects an appropriate set of text macros. In this program change of mode creates lots of new buttons, options and settings.

Modes
MultiPSK manages the most comprehensive range of modes of all the programs reviewed. Many of the modes handled you may never have heard of. The decoder for RTTY and PSK are second to none. The program will work with TNC / Modems as well as up to three sound cards.

Rig Control
The program works both with Commander (DXlabs) and Ham Radio deluxe.

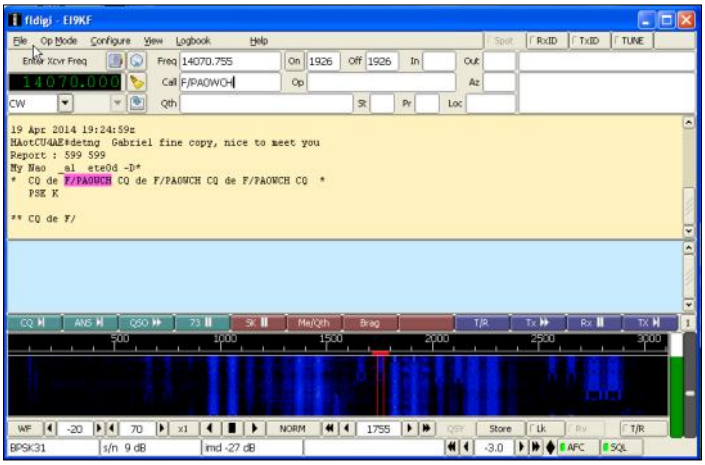
Cost
The program is available free of charge though some functionality requires that the program be registered at a cost of €30 and updates are provided regularly.

Likes
A very capable and useful program which fully integrates with an excellent suite of DX modules. The program of choice for CW, PSK and RTTY especially if using a TNC/ Modem.

It has the most comprehensive range of modes available in any program and offers the greatest flexibility and amount of control over Tx and Rx parameters.

Dislikes
A really dreadful user interface. Badly laid out old-fashioned buttons everywhere result in lack of ease or comfort using this program. The program however has a dedicated band of faithful followers who swear by it! Selecting a signal on the waterfall is not as easy as with DM780, Fldigi or MixW

FLDIGI
General
A very popular free program by W1HKJ et al. Compact easy to configure standalone program. It has its own logbook that allows the user to export entries into other logs etc. Documentation is very good. Unusually, Fldigi is available for multiple computer operating systems; FreeBSD™; Linux™, OS X™ and Windows™.



Macros
Up to four rows of 12 macro buttons are available. these are coloured in three groups of four per row which helps in grouping buttons according to function.

Modes
Fldigi handles most of the available digital modes - a hugely comprehensive list. Including Olivia and other MFSK modes.

Rig control
Fldigi has its own rig control facility using “Rigcat’ and “hamlib’ which allow control of most transceivers.

Likes
I like the way that the width of the cursor on the waterfall changes according the mode being selected. Fldigi integrated with the log of Dxlab and Winlogger 32. The appearance of the program can be totally customized with the user selecting colors , fonts and such etc.
It is economical with screen space. The program, like MixW is self contained in a small window. This is a very popular program with users. It works with Olivia. Fldigi has a module called FLARQ which is a messaging program that sends and receives error free messages. This is useful for sending files and for emergency message handling.

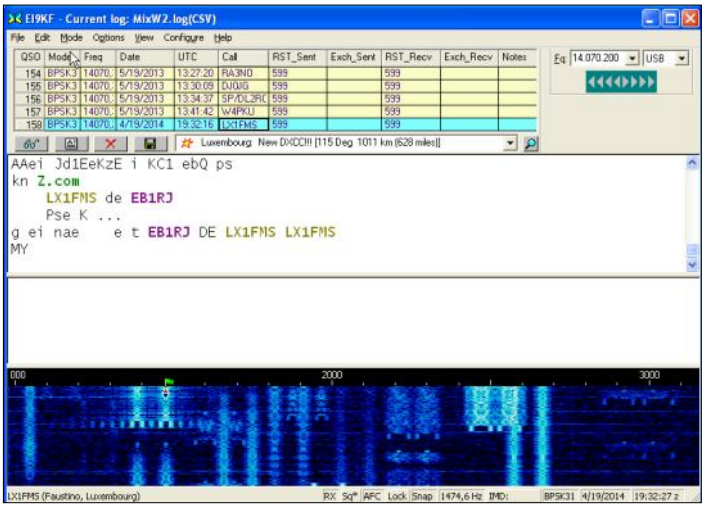
Dislikes
Hovering over a macro button with the mouse does not reveal what the macro will say (as happens in many other

programs). Not that easy to get information from the receive window into the log. Fldigi does not offer an effective method of keying the radio in CW.

MixW

General

This is an excellent powerful stand-alone program which has its own built-in logging system. Currently it costs about $50 for a licence. The receive window is one of the nicest to use. I like the way that the call sign is recognised automatically and highlighted. MixW has its own WinKey and Rotor control facility and will work with an external TNC.



Macros

The program offers the possibility of fusing up to four horizontal rows of 12 macro buttons. Right clicking on any button allows the user to customise the macro. A host of fields are easily included in any macro.

Modes

MixW offers most of the popular digital modes . Unfortunately it does not provide BPSK63 or Olivia, two modes increasing in popularity.

Likes

Very attractive interface. Callsign of incoming calls automatically highlighted in the receive window. Hovering over the call gives instant information of country of origin and beam heading.

Occupies a small amount of space on the screen so long as all the optional windows (clusters etc) are not opened.

Dislikes

Selection of signal involves 'planting' a small flag on the waterfall. No cursor lines (like in DM780 or Fldigi) are provided to help in centring on the waterfall trail to grab a signal.

Summary

There are a significant number of programs available to the amateur radio operator enabling the use of digital modes. Some are self-contained, others form part of a suite of programs designed for general logging etc (DM780, WinWarbler) . Choice will be made largely on the basis of cost or personal preference based on ease of use and available features. My own preference, having spend some time using all the programs discussed, is for DM780 which I judge to be state-of-the-art. If computer screen space is limited or a simpler interface is required, next on my list are the more 'compact' programs of Fldigi and MixW. MultiPSK offers more modes than any other but is definitely not for the beginner.

	Digipan	**MixW**	**Multiuse**	**Win Warbler**	**Fldigi**	**DM780**
Cost	Free	€30	Free (or €30)	Free	Free	€60 (suite)
Stand-alone	Y	Y	Y	Suite	Y	Suite
Appearance	***	*****	*	***	*****	*****
Ease of Use	****	****	*	***	*****	*****
Logging	N	Y	Y	Suite	Y	Suite
Modes	**	****	*****	**	*****	*****
Compatibility	N	Dxlabs *	HRD, DXLab	HRD, DXlab	Dalai	HRD, DXLab
Multiple decode	N	Y	Y	Y	Y	Y
Macro Buttons	12 x	12	12	16 x 2	12 x 3	Infinite No.
Call lookup	N	Off line	On & offline	O n & off line		On & off line
Rotor control	N	Y		Y	N	Y
DX cluster client	N	Y		Y		Y
TNC support	N	Y	Y	Y	N	N
Documentation	*	*****	***	****	****	*****
MODES						
CW		Y	Y	Y	Y	Y
PSK 31	Y	Y	Y	Y	Y	Y
PSK 63		Y	Y	Y	Y	Y
Olivia	N	N	Y	N	Y	Y
Domino	N	N	Y	N	Y	Y
Contentia	N	N	Y	N	Y	Y
MFSK	N	N	Y	N	Y	Y
MT63	N	Y	Y	N	Y	Y
Hell	N	Y	Y	N	Y	Y
PACTOR	N	Y	Y	N	N	Y
Throb	N	Y	Y	N	Y	Y

D-Star DD-Mode and Wireless Mesh Networking

John Ronan EI7IG & Darren Long G0HWW

Background

So, I (EI7IG) have this general idea of how Amateur Radio and its cohort of operators would be used in a "Disaster" should the situation warrant it (fingers crossed that never happens). The general concept is that each large urban area is supported by its neighbouring areas. Consider the South East as an example.

Let's say a major incident occurred in the Waterford area, all services are under pressure and Amateur Radio operators are asked to assist (yes you will need to use your imagination). Well, we already know, that as part of the Framework for Emergency Management, we will either be tasked by An Garda Síochána (AGS), or, potentially another organisation will contact us directly to look for assistance.

It is pretty much universal that organisations carry their own tactical communications with them when deployed, so we will most likely be requested to assist them with getting communications out of the immediate area, either to a HQ tens of kilometres away, or possibly (inevitably?) back to Dublin.

In general these communications would involve two broad types of messages, time critical and not so time critical. For the time critical communications, we are talking about establishing voice communications, be it on VHF/UHF simplex, through existing VHF/UHF repeaters (the Southern Ireland Repeater Network is a fantastic resource, should it be available), or using HF NVIS for longer distance.

For less time critical messages, digital communications modes make a lot of sense. Especially when the information is "boring" lists of items to be transmitted, i.e. lists of various types etc. So the general idea is to let computers be used for what they are good at, the boring stuff. Several choices here include NBEMS/Fldigi [1], PSKmail [2], the Winlink 2000 network [3] or Broadband Hamnet [4] (IP Mesh Networking).

It had been a while since I had done any work with mesh networking, and early in 2013 I got to thinking along the following lines:

- get an IP backbone running between two good high sites in Waterford county.
- these two sites should be accessible via
  - standard wireless networking equipment (Range approx 10k LOS)
  - Icom ID-1 D-Star Radios in Digital Data Mode (Range approx 30k, LOS)
  - or potentially the NorthWest Digtal Radio UDRx [5], which will operate in the UHF band with 25 watts (might be good out to 50-60k LOS).

Given the terrain, it may require one or two hops to reach this backbone from any node, whether portable or at an Amateur Radio operators house.

If this "Network" had multiple points of attachment to the "Internet", let's say in the Kilkenny and Cork directions, as well as Waterford. Then designed correctly, this network should be highly robust and resilient. As one of the authors has access to several Icom ID-1 D-Star radios (effectively dumb ethernet bridges when in DD-Mode) a first step was to look at the use of existing wireless mesh technologies with this equipment.

So thinking about requirements for the mesh network:

1. It should be TCP/IP based. I.e. use standard "Internet" protocols.
2. Once a node is configured, it should be possible to forget about it.
3. When a node switches on, it should integrate into the network automatically and in a reasonably short period of time.
4. It should be possible to access the "Internet" from (and via) the node in a reasonable amount of time after switching on.

This was the starting point for a paper Darren Long, G0HWW and I (EI7IG) wrote for the ARRL/'TAPR Digital Communications Conference [6] last year, on which this article is based.

So, looking to the literature in the area, the Optimized Link State Routing (OLSR) protocol [7] appears to have become a de-facto standard in wireless mesh networking, I quickly found some issues with using it and found another protocol, Better Approach to Mobile Ad hoc Networking (BATMAN) [9], which came from experience with OLSR, but (as the name hints), attempts to take the experience and knowledge gained with large OLSR deployments and improve on it.

OLSR

In OLSR, the key concept used in the protocol is that of multipoint relays (MPRs). MPRs are selected nodes which forward broadcast messages during the flooding process. Essentially each node behaves like a smart APRS digipeater, in that MPRs are like "elected", wide area digipeaters. So, contrary to the classic link state algorithm, partial link state information is distributed in the network. This information is then used for route calculation. OLSR provides optimal routes (in terms of number of hops).

The olsr.org [8] OLSR daemon is an implementation of the Optimized Link State Routing protocol. Hence it allows for mesh routing to take place over for any network device supported by the underlying operating system.

BATMAN

The development of BATMAN was driven due to limitations that became apparent with OLSR once deployed in large networks (hundreds of nodes). Due to the constant growth of existing community mesh networks, and because of the inherent requirement of a link-state algorithm to recalculate the whole topology-graph (a particularly challenging task for the limited capabilities of embedded router hardware), the limits of this algorithm became a challenge. Recalculating the whole topology graph once, in an actual mesh with several hundred nodes, can take several seconds on a small embedded CPU. Though, it has to be noted that this was not a particular problem in our test environment.

The approach of the BATMAN algorithm is to divide the knowledge about the best end-to-end paths between nodes in the mesh, to all participating nodes. Each node perceives and maintains only the information about the best next hop towards all other nodes. Thereby the need for global knowledge of local topology changes becomes unnecessary. Additionally, an event-based but timeless (timeless in the sense that BATMAN never schedules nor timeouts topology information for optimising its routing decisions) flooding mechanism prevents the build-up of contradictory topology information (the usual reason for the existence of routing

loops) and limits the amount of topology messages flooding the mesh (thus avoiding the extra overhead of control-traffic). The algorithm is designed to deal with networks that are based on unreliable links.

The protocol algorithm of BATMAN can be described (simplified) as follows. Each node transmits broadcast messages (called originator messages or OGMs) to inform the neighbouring nodes about its existence. These neighbours are re-broadcasting the OGMs to inform their neighbours about the existence of the original initiator of this message. Thus the network is flooded with originator messages. OGMs contain at least the address of the originator, the address of the node transmitting the packet, a TTL and a sequence number.

OGMs that follow a path where the quality of wireless links is poor or saturated will suffer from packet-loss or delay on their way through the mesh. Therefore OGMs that travel on "good" routes will propagate faster and more reliably.

In order to tell if a OGM has been received once or more than once, it contains a sequence number given by the originator of the OGM. Each node re-broadcasts each received OGM at most once and only those received from the neighbour which has been identified as the currently best next hop towards the original initiator of the OGM.

In this manner, the OGMs are flooded selectively through the mesh and inform the receiving nodes about other node's existence. A node X will learn about the existence of a node Y in the distance by receiving its OGMs, when OGMs of node Y are rebroadcasted by it's single hop neighbours. If node X has more than one neighbour, it can tell by the number of originator messages it receives more quickly and more reliable via one of its single hop neighbours, which neighbour it has to choose to send data to the distant node. The algorithm then selects this neighbour as the currently best next hop to the originator of the message and configures its routing table respectively. Due to the linear layout of our test network, most of this functionality was not really of importance, however, it was noticed that during testing, BATMAN never "lost" a route to another host, while OLSR frequently did.

Map of nodes, EI7IG/M is co-located with EI7IG

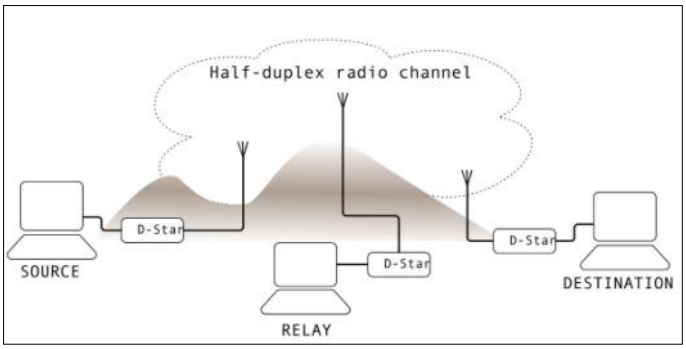
The Experiments

Figure 1 shows the area where the experiments were conducted and the location of the nodes. Figure 2 shows the experimental network used to measure the system performance. Each node in the network consisted of an Icom ID-1 transceiver and a Linux PC. The Iperf [10] network test tool was used to generate TCP test traffic.

Several separate network configurations were examined:

- Control (static routing) - This was a 8.5km link , from EI3JB to EI7IG.
- Point-to-Point - This was also the 8.5km link from EI3JB to EI7IG.
- Relay - This included the link between EI3JB and EI7IG and added a short hop approx. 10-15m, from EI7IG to EI7IG/M. EI7IG/M was also running low power and an indoor antenna.

For the control point-to-point, and relay tests, all routing was statically configured. EI7IG was the traffic generator for the former, EI7IG/M for the latter.



As per figure 2, the testbed was configured with Linux nodes and Icom ID-1 transceivers at 3 separate locations. Node 3 was co-located with Node 2, with Node 3 connected to an indoor and running low power so that it could not be heard by Node 1.

As a starting point, the parameters defined in the OLSR standards document (RFC3625) were used, and immediately proved themselves unusable on the low bandwidth D-Star links. We endeavoured to set the parameters of both protocols such that their performance could be compared. Both protocols have a "Hello" (or OGM) packet that they send out at regular intervals and these intervals were set to be as similar as possible, so a packet was transmitted every 2, 4, 6, 8 10 and 30 seconds. The available bandwidth was then compared with a configuration where all routing was set up manually.

Results

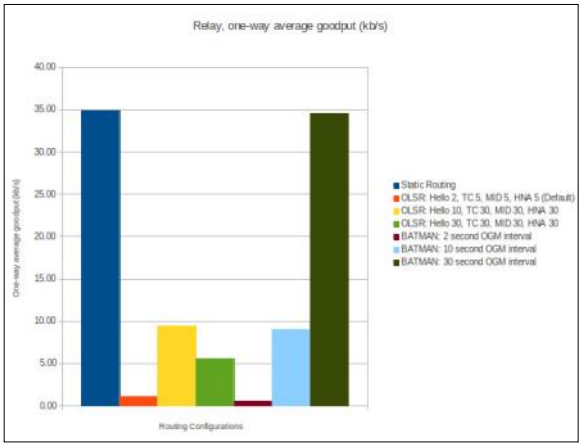
The results can be seen in Figure 3 and Figure 4. In the point-to-point configuration, there was nothing out of the ordinary noticed, however in the two-hop (relay) configuration (EI7IG/M <-> EI7IG <-> EI3JB), the amount of data transferred (goodput), varies significantly between the different routing configurations. Static routing achieves broadly expected results for unidirectional goodput and bidirectional aggregate goodput, i.e. roughly half of the rates achieved for the single hop topology and is consistent with the expected doubling of the channel utilisation.

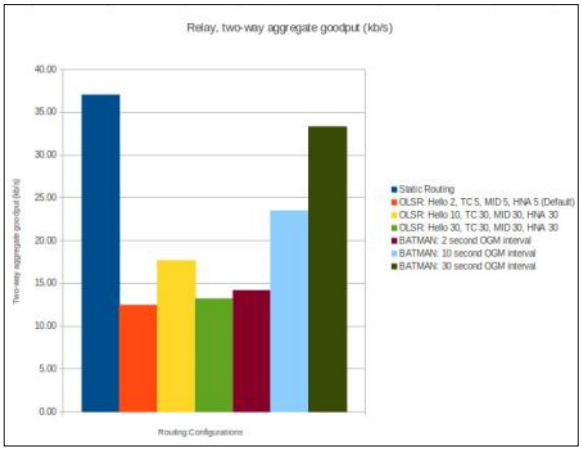
For both the OLSR and B.A.T.M.A.N. routing methods in the "relay" topology, initially we see a considerable drop in one-way goodput and aggregate bi-directional that eventually improves with reduced routing state distribution overhead (less "Hello" packets). The topology is essentially one with mutually hidden transmitters affecting end-to-end transfers in both directions. The aggressive, higher overhead OLSR and BATMAN configurations (Hello packets every 2 - 10 seconds) achieve poor goodput even in the unidirectional tests on the two-hop topology, as the number of "Hello" packets on the links is enough to completely overwhelm them.

Conclusion

When we started to look at OLSR (and then BATMAN), we constructed a small, three node network with mutually hidden transmitters. We began by using the standard parameters (from RFC3626) for OLSR, then increased them in order to achieve better "goodput". In light of the experimental results we can conclude that:

- For a point-to-point, or indeed point-to-multipoint configuration, where all nodes can see one another, OLSR would appear to operate reasonably well.
- Once any relaying is introduced, it appears that BATMAN performs better than OLSR. Based on our results, we would not expect to see any multi-hop scenario where OLSR would outperform BATMAN in a D-star DD mode network. More testing in larger networks would assist in validating or invalidating our opinion (If you have a dozen or so spare Icom ID-1 radios and antennas, we could put them to good use!).
- In a relaying scenario, BATMAN begins to perform comparably to a static configuration once OGM intervals of approx. 30 seconds are used. This obviously impacts on the convergence time of the network. Consequently as the network grows, there is a trade-off to be considered between the limited bandwidth available with DD mode, and how quickly the network is required to converge.
- On the BATMAN website , as part of the description of the protocol concept, the following sentence is used "The algorithm is designed to deal with networks that are based on unreliable links.". Our (limited) evaluation appears to validate this claim.





Far from being complete, this paper only gives a limited snapshot of the abilities of both protocols. The test network is small, and was deliberately chosen to be "difficult", though not outside the realms of possibility. For any amateur radio operators attempting to use a mesh protocol with Icom DD mode or other low bandwidth equipment, we would strongly suggest to look at BATMAN first to address your particular network idiosyncrasies.

Looking to the future, and the (hopefully) imminent release of North West Digital Radio's UDRx, it would be interesting to re-do these tests over a more intelligent link layer, and see if better efficiencies could be achieved. Also, it was suggested to one of the authors at the TAPR/DCC that we should also look at the Babel protocol [11] which may be even better than BATMAN.

So, there you have it, for the moment BATMAN is best!

Acknowledgements

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[6] Ronan, J, (2013). Evaluating OLSR and B.A.T.M.A.N over D-STAR. *In TAPR and ARRL 32nd Digital Communications Conference*. Seattle, Washington, September 21-23. Newington, CT: ARRL. 43-50. [ONLINE] Available at: *http://www.tapr.org/pdf/DCC2013-OLSR-BATMAN-EI7IG-G0HWW.pdf*. [Accessed 10 May 2014]

Cork hosts Space Station Ground Station

Daniel Cussen EI9FHB

The National Space Centre near Midleton in Cork is hosting a ground station for amateur video downlinks to be used as part of the Amateur Radio on the International Space Station (ARISS) school contacts program.

School contacts between schools and the ISS are nothing new, indeed for decades students have spoken to Astronauts in space using 144MHz voice as part of ARISS. I wanted to pick up these broadcasts for fun and for the technical challenge.

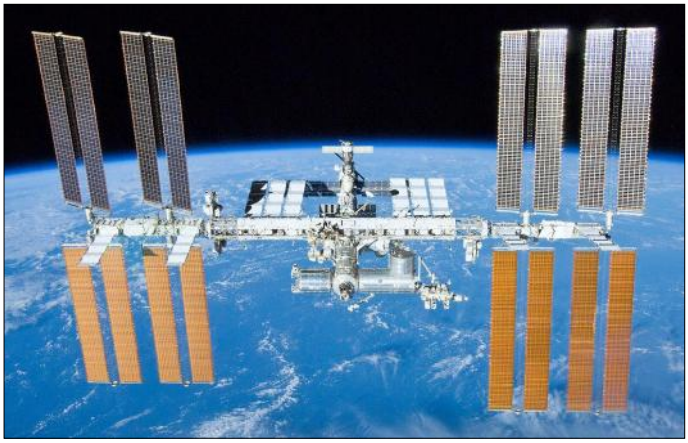


Figure 1: International Space Station

In late summer 2013 a list of recommended equipment was released and I started trying to acquire all the bits. One area I knew nothing about was tracking low earth orbit satellites (LEO). I contacted Dermot EI4ESB from North Dublin Radio Club to see if we might jointly build a working receive system. A dish and accurate tracking is needed as the space station is some 400km away and travelling at 17,500 km/ hour. I hoped my TV background would help, both in microwave electronics and in decoding the DVB-S video format.

The broadcast system in space is a major feat in itself. First conceived by the Italian amateur community, they hoped to add live video downlinks to the existing voice-only school contacts. The antennas on the ISS Columbus module were installed when it was on the ground before 2007 at a cost of over €80,000 which was collected by the community.

Recently, digital transmitters and receivers have enabled weak TV broadcasts to be picked up over much greater distances. As the space station generates all its power from solar, only about 10 watts output power was possible. This meant advanced compression (MPEG2) and digital transmission (DVB-S) would be needed for broadcast along with large ground dishes (1.2 metres) and advanced tracking systems (+/- 4 degrees).

Even with all these technologies it appeared the normal eleven minutes pass time for a school contact would be reduced to about eight minutes when the space station would be in TV range.

All these constraints led to the idea of having multiple stations on the ground working together to relay the signal to allow a much longer school contact up to 20 minutes, longer than ever achieved before.

By late 2013 the transmitter was in space, having taken years of planning, and the next step was real-world test broadcasts. I had gathered an old prime-focus dish, a circular feed from the Netherlands and a pre-amp and down converter from Germany. The video was decoded with an ordinary satellite TV PC card, and special custom software written by a French amateur F6DZP. The software decodes the signal, records the signal level for testing and can also record the video and signal quality. Custom tracking and dish calibration software was also written by Piero I0KPT to optimise the tracking capabilities of the hardware.

In early 2014 the first broadcast was announced. This was to use four different frequencies and two different picture qualities (bit rates) during a single pass over Italy. With the space station always passing from west to east, it meant that Ireland was likely to pick up the signal before the official Italian ground station.

I got going on trying to test everything. Connecting the computer to a Sky dish confirmed the video could be decoded and the software was working. Due to the frequencies in use (around 2.4GHz) we expected Wi-Fi interference in urban areas, so a decision was made to operate portable from the Dublin mountains over Tallaght—a site with no houses to the west, south and east, and with a good horizon view.

Tom EI7HT and I decided to do a dry run. Due to the portable operation, motorised tracking was not possible; instead handheld "armstrong" tracking was the best option. We put a piece of paper on the ground marked North, South, East, West and used a digital spirit level for approximate elevation. (See figure 2)

We printed out a second by second prediction of the pass, with elevations and direction for every second of the pass. During the dry run we found setting up took longer than planned and the feedback from the computer consisting of

Figure 2: Portable Operation

beeps for good signal was not loud enough. For the real first pass we hooked up the audio output from the computer into the car stereo for super loud beeps, and manned the dish. Eventually the time arrived and within minutes we had the beeps and results we expected.

Delighted, I sent my recordings of the results to the ARISS Europe team, and soon got word back that I was the first non-core member to receive the broadcast.

We followed the later tests and gained much experience. Five sets of recommended equipment had been donated by the European Space Agency, for use as official ground stations in Europe, and I was offered one of them.

At this point the Wi-Fi issue became a major issue. Further south and west was better to allow longer contacts so we started a country-wide hunt for a site. I put some feelers out and the National Space Centre offered to host the equipment. Their site is ideal, far from all sources of RF interference and light pollution. It was originally used for telephone satellite circuits, and is now used for downlinks from Earth Observation satellites and uplinks to geostationary satellites.

I tested the equipment in Dublin and prepared it for installation in Cork. As it was a six-hour round trip, I wanted to make sure the system was reliable and Irish weatherproof. I also contacted some local Cork amateurs in the hope they could help during actual school contacts. While the tracking and video downlink is fairly automatic there is also a 144MHz voice uplink that needs to be manned.

I took three weeks off work to finalise the testing, and Tom EI7HT and myself spent three full days installing the equipment on the flat roof of the security gatehouse. (See figure 5). Since the installation in September 2014 there have been no test transmissions from space. We expect them to resume in March 2015 and then, shortly after, the system will be used for video contacts with schools.

Along with the Cork ground station there are also ground stations in Portugal and France, and two of each in Italy and Poland. We hope these will operate in tandem to extend the number of minutes the children get to ask questions. (See figure 3).

Once regular video contacts take place, Irish schoolchildren

Figure 3: Chaining Setup

will get the chance to use it and amateur radio to speak to the astronauts. This can only encourage their interest in science, technology, engineering and maths.

While we expect the system to work, we are also looking at lower-cost tracking systems and are testing them in the Dublin area. If anyone has a rural site with views to the west, south and east from ground level we would be interested in hearing from you. A US ham has also developed filters to try block the Wi-Fi signals from towns and cities.

I would like to thank all those who helped so far, the National Space Centre, members of South Dublin Radio Club, Dublin Hacker space TOG, Cork local amateurs, North Dublin Radio Club's Dermot EI4ESB, members of ARISS Europe and North America, NASA, Amsat Italia, the European Space Agency for supplying the downlink ground station equipment and the IRTS Promoting Amateur Radio Fund for supporting the VHF voice uplink.

Related Links:
http://www.ariss-eu.org
http://nationalspacecentre.eu/
http://www.nasa.gov/mission_pages/station/main/

Figure 4: The National Space Centre

Figure 5: Installation at the National Space Centre

IRTS AGM - WORKSHOP TALKS

We hope that one of the reasons you are going to Kilkenny is to attend one or all of our workshops. The talks will take place on Saturday 25th from 2pm to 5pm in the City Suite at Hotel Kilkenny. The organising committee had an idea of gathering a number of experts who would share with us their insights and views on a number of different topics as you can see below. We hope you will come and join us. Be warned that it might change your thinking or the way you do things in future! Admissions to all talks is free.

If nothing else we will have plenty to talk about over dinner.

Our line-up on the Saturday afternoon includes -

"Getting Started in Contesting" from Paul O'Kane EI5DI

Licensed since 1961 as GI3OTV, and as EI5DI from 1978. IRTS President 1997-2000. Computerised IRTS membership records in 1984. Active CW/SSB contester on HF, and author of SD contest logger (www.ei5di.com). Team member of world record T32C DXpedition to Kiritimati Island in 2011 (213,000 QSOs).

Says "Radio amateurs do it with RF - everyone else uses the internet".

" DXpeditioning On The Edge" from David Deane EI9FBB

David is an ARRL appointed DXCC card checker, incl. W.A.S. & 160m. His interests include DXing, DXpeditioning & working with weak signals. His favourite band is 6m and currently has over 150 DXCCs worked via terrestrial propagation on this band. David is the holder of 10 Band DXCC, 8 Band Worked All States (W.A.S.), 9 Band Worked All Zones (W.A.Z.), DXCC Challenge (2500 +), USA-CA, IOTA and WPX.

"Spark To Space" from Don Field G3XTT

Licensed since 1968, has operated all bands 160 through 23cm. He has all DXCC countries worked and confirmed, and over 3,000 credited to the DXCC Challenge. Past member of the RSGB Board & Management Committee. Author of the RSGB Operating Manual and the 6 Metre Handbook. He was on the secretariat of IARU conferences in Cavtat (Croatia) and Vienna. Current editor of Practical Wireless magazine.

"Amateur Radio Emergency Communications - why me?" - Greg Mossop G0DUB

Emergency Communications Co-Ordinator for the IARU in Europe, the Middle East and Africa. A radio amateur for over 25 years, active member of the Radio Amateurs Emergency Network (RAYNET) in the UK as their Network's Emergency Planning Team since 2000, and Technical Support Team leader since 2004. Electrical Engineer by profession, has organised several Global 'Simulated Emergency Tests' for the amateur radio community worldwide

Irish Radio Transmitters Society

83rd Dinner & AGM & SEARG Radio Rally 2015

Hosted By

The South Eastern Amateur Radio Group EI2WRC

Hotel Kilkenny, College Road, Kilkenny

★★★ WEEKEND EVENTS ★★★

Saturday 25th April

From 2:00pm To 5:00pm in The City Suite:

Guest speakers

Paul O'Kane EI5DI "Getting Started in Contesting"

David Deane EI9FBB "Dxpedition on The Edge"

Don Field G3XTT "Spark to Space"

Greg Mossop G0DUB "Amateur Radio Emergency Communications -Why Me?"

7:00pm in The Orchard Suite:

IRTS Annual Dinner followed by music from local musician Tomas Jackman. Admission to dinner is strictly by ticket only. Tickets are priced at €35. Tickets are available from John Ronan EI7IG

Sunday 26th April

From 11:00am To 2:00pm in The Skyline Suite:

SEARG 2015 Radio Rally & Electronics Fair

Admission: €5

Traders include -

- *South East Communications*
- *Maplin Electronics*
- *Long Communications*
- *PJ Mobiles Ltd*
- *Wescom Ireland Ltd*
- *Airsat Communications*
- *CQ Communications*
- *John Kelly Printing*
- *Sean Martin PMR Conversions*
- *South East Maker Space*

There will also be a bring & buy section at the rally. Full details are available on the IRTS AGM page

2:00pm In The City Suite:

IRTS 2015 AGM All paid up IRTS members are very welcome

FOR MORE INFORMATION CONTACT SEAN EI2HZB ON 083-1379764 OR VIA EMAIL AT irtsagm@searg.com

Galway VHF Group
Steve Wright EI5DD

This report details the activities of the Galway VHF Group during the past year.

West Coast Wheelers Cycle - February 2014
The Group supplied communications on 70.425 MHz along two separate races, and to emergency and cycle repair vehicles. Marshals with PMR equipment controlled traffic at junctions and were forewarned of the approach of the race. Very few incidents required medical assistance.

Galway Head of the River – March 2014
This race is run over a 3.1 mile stretch of the Corrib. Crews are called in turn, from a holding area, to the start line Their start and finish times are sent to the race centre, and safety boats are advised of overdue crews. We use dual-band 2m and 70cm rigs, together with PMR handhelds on the safety boats. All transmissions are recorded for later reference.

Connemara Ultra Marathon – April 2014
This is run through the hills in Connemara, and HF is used as there is little line-of-sight communications. 80m gives coverage throughout the entire course. Base locations were at the Maam Cross finish, along with a medical facility, and at the bottom of the Maam Valley. Mobile stations followed each event - the 39.3 mile, the 26 mile, and the half-marathon 13 mile, with a fourth station being positioned as needed. Ambulances and marshals use PMR handheld rigs, and can be co-ordinated by the HF mobiles. This is a busy operation with many injuries and cases of exhaustion. Control takes place from Maam Cross.

Croi Round the Corrib Cycle - May 2014
This is a challenging 75-mile course with hundreds of participants. Tom EI2GP is the medic for the event. The Civil Defence provides first aid and transport facilities and there are two cycle mechanic crews. 70.425 MHz is used, with communication to Marshals and Civil Defence via PMR handhelds. An operator is located with each mechanic crew. Net control is covered within the race and there are 3 other operators distributed along the course to cover road safety. APRS will feature in future events to get an overview of the location of vehicles – it will save doing regular checks over radio links.

Galway Regatta – June 2014
This is a testing event, run over a 1000 metre course with "Eights","Quads", Double Sculls and Single Sculls on the water at all times. We have operators reporting from the Start, the Finish and the Slip. As there are so many crews involved tempers can fray and it is essential to maintain order. The whole event is a little like "Air Traffic Control". There is no room for idle or protracted chat - it has to be handled in a fast and coherent fashion. There are safety boats on the water and Civil Defence is on standby. The Control has full view of the entire course and can deploy services instantly when necessary. Again, all messages are timed and recorded, an invaluable asset in the event of disputes. This is a good event for AREN training, with messages kept brief and to the point - it's not an event for the "laid back"! It's a big day out for many families who have siblings rowing. At the end of the operation there is a very inviting beer tent and the mandatory "Death Burger" vehicle.

The Castlebar 4 Day walks – July 2014
We have been assisting with this event since 1990. Participants ramble over rough countryside and around the hills of County Mayo in the general area of Castlebar. Each ramble is 30 km in length and the terrain is reasonably challenging. There are two operators with 4m handhelds plus PMR rigs, and six marshals with PMR rigs. A backup vehicle carries a defibrillator, oxygen and various splints and a stretcher, and can transport casualties to an ambulance or directly to hospital. Tom EI2GP is the medic on the walks. Typical injuries are twisted ankles, broken bones, and bad blisters. If equipment is required from the backup vehicle it can be carried to the location of the incident. There has only ever been one cardiac problem on a walk and the casualty was taken directly to hospital within 15 minutes.

Galway Walking Club Marathon – July 2014
This is a challenging cross-country walk, together with a 13-mile half-marathon. The communications base is at Maam Community Centre. There are six checkpoints, again using 80m. Accountability is a priority - when walkers drop out the information is passed to all other checkpoints and to the base. Casualties may need to be carried off the walk if necessary. This can be a busy operation and the co-ordination is reliant on the radio links due to inadequate mobile phone coverage. Marshals with PMR handhelds relay information to the checkpoints to enable first aid or transport to be organised.

Croi Etape – July 2014
This is an event for the more serious cyclists and is run through the hills of Connemara. The lead and rear cars have 80m and 4m rigs. The ambulance, marshals and mechanics have PMR handhelds. The are 4 other operators with just 4m for liaison with the cars. Net control is done on the fly from one of the 4m stations within the cycle group.
All of our operations have withstood the test of time. HF has been the key to most of the operations in Connemara. We have become well adapted to a mobile or portable Net control. Often this is a better alternative that a command centre.

The IRTS AGM and Rally in Galway - March 2014
This was held in the Galway Bay Hotel and was a great success - with 67 attendees for the excellent Saturday-evening dinner.
The Rally/Trade Show area allowed us plenty of space without becoming cramped. It was the first time for Maplin Electronics to appear at a Rally and they put on an impressive display. The local Freemasons were raising money for "Teddies for Loving Care". This charity distributes teddy bears to children in Casualty departments - a simple way to comfort a child who may be very ill and upset by the trauma of hospital. We had 167 through the doors which was pretty good for a rally on the West Coast, and the AGM itself ran smoothly.

Galway VHF Group Projects.
With the help of revenue from the rally, we purchased equipment for a 70cm repeater with EchoLink and IRLP, an additional APRS digi-peater, a 4m EchoLink gateway and a 2m gateway. These projects should be on-air soon. Major projects like these seem to be a never-ending black hole for cash but we carry on regardless. The ultimate reward is to see

them active and hopefully bring more activity to our area. Our website *www.galwayvhfgroup.blogspot.com* gives full details of our projects and activities. We have spent some time modifying commercial Low and High-Band radio equipment. It is safe to say that this equipment, whilst missing some menu facilities and VFO control, does appear to be more sensitive and immune to interference.
Many of our members are keen constructors of kit and homebrew projects. Hopefully these will be displayed on our website once they are boxed and look pretty!

Portable Operation
We are planning a field trip to operate military equipment on HF, 6m and 4m complete with the sending of digital images. It has taken a long time to gather equipment for outdoor operation but we are slowly making progress. A few Island trips may also be possible over this year. Our Craggy Island DXpedition group may, at long last, see a couple of Islands! We do take an annual pilgrimage to the Fr. Ted house located in the Burren for afternoon tea and we sometimes set up a portable station at this location.

During the coming months we intend to use 5MHz. Theoretically NVIS would be advantageous but, unfortunately, real NVIS mobile antennas can be expensive.

Links with other Agencies.
Our links with the Civil Defence, the Red Cross, and the HSE West ambulance service have been a great advantage in establishing our worth as radio operators in the community. We have to be careful not to let AREN operations dominate our club operations. Trying to gather new members has been difficult but we do have one in the pipeline. We are fortunate in having some computer, communications and electronics whiz-kids in the group. A shame that contest operation does not seem to be on the agenda but we occasionally have a fling in that direction. Though we are one of the smaller groups in the country, we put a lot of effort into our activities. There is more to amateur radio than contesting and certainly we cannot see the connection between contest operation and AREN operation as they are poles apart. We look forward to another prolific year of operation.

Pictured above: 4m Gateway, 70cm Repeater, West Coast Wheelers

Pictured above: EI5DD portable, Practical night at the Club, HF at Fr Ted

JY1 Hussein on the Mike

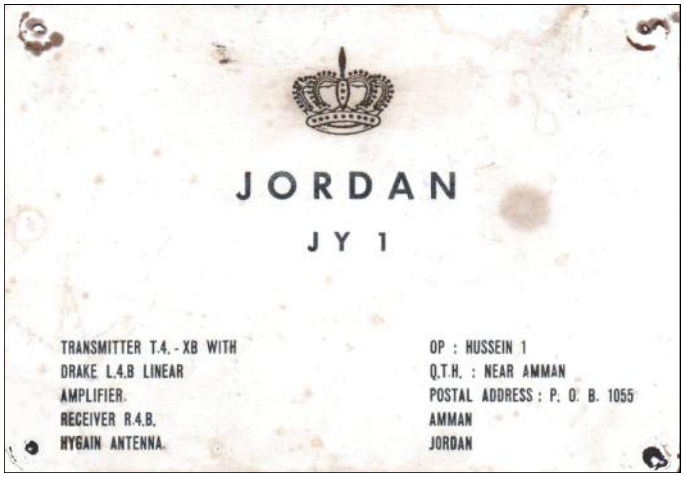
Tim McKnight EI2KA

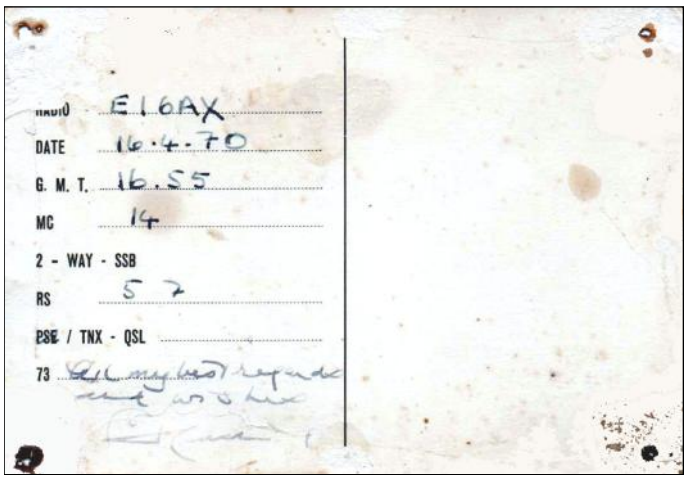
Hussein bin Talal was crowned King Hussein I of Jordan in 1952 at the age of 16, and reigned through difficult times until his death of lymphatic cancer in 1999. He had many interests—piloting helicopters and fixed-wing aircraft, riding Harley-Davidson motorcycles at high speed through the streets of Amman as his security detail raced to catch up, sailing his yacht in the Gulf of Aqaba, and amateur radio.

Photo of JY1 that accompanied his QSL card to EI6AX.

King Hussein's first recorded use of the famous JY1 amateur radio call sign was on 22 February 1970. JY1's first logbook can be viewed on hamgallery.com/gallery/J/jy1_1.pdf, and his early entries in it are as humourous as that of any new ham. Two months later, at 1655z on 16 April 1970, the logbook records his QSO with EI6AX Bernie O'Sullivan of Cahermore on the Beara Peninsula in County Cork. According to his logbook, this was King Hussein's first contact with an EI ham. Subsequently, Bernie and a number of other Irish hams enjoyed regular contacts with King Hussein that spanned almost thirty years.

King Hussein would often start a QSO with 'JY1 Hussein on the mike' and insisted that other hams call him simply Hussein. He dutifully recorded in his logbook that he sent a QSL card to Bernie O'Sullivan for their first QSO. That same card and the photograph that accompanied it are pictured above. Despite years of exposure on the wall in Bernie's 'tumble-down old outhouse shack before they moved indoors,' King Hussein's signature can still be seen on the photograph, and on the card can be read 'All my best regards and wishes, Hussein I.'





Front and back of the JY1 QSL card sent to EI6AX and mentioned in Pat Kenny's historic interview with Bernie O'Sullivan in 1999 (Courtesy EI6AX)

King Hussein had a particular affinity for Ireland, and the feeling among many Irish people was mutual. For example, he was asked to record one of the official welcome messages that Teilifís Éireann broadcast on New Year's Eve 1961 when it began television transmissions. He and Queen Noor paid a state visit to Ireland in 1997, and this was recalled in tributes paid by various politicians in Dáil Éireann after his death. Ruairí Quinn TD said at the time: 'It is true to say that the King was a personal friend of this country. He had developed personal links through his interest in ham radio and he was aware of the many Jordanian students studying here.'

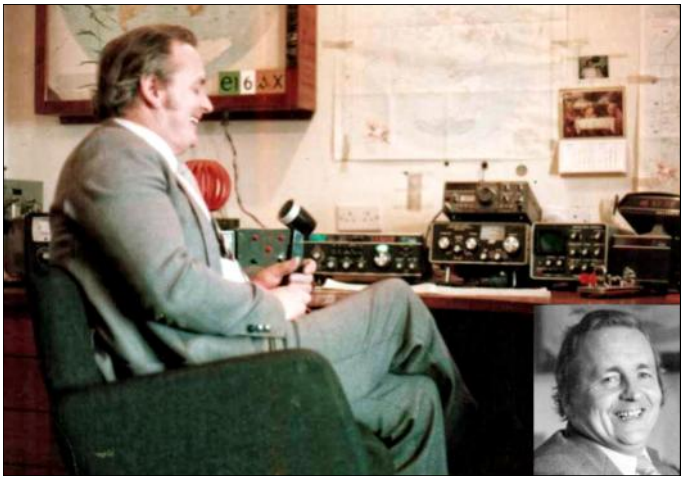
On 8 February 1999, the day kings and presidents from around the globe were gathering in Amman for King Hussein's funeral, RTÉ Radio presenter Pat Kenny did a telephone interview with Bernie O'Sullivan, himself a former schoolmaster and born story-teller. In that interview Bernie relates a few of the stories from his many conversations with King Hussein and recounts his humility and remarkable ability to relate to others no matter their station in life.
At the end of that 1999 interview Pat Kenny asks, 'can amateur radio survive in the age of the internet?' Bernie answers with another question: 'I wonder Pat have you ever heard of packet radio?,' and goes on to explain that hams have

long used this for email before the internet came along. Bernie's YL, Mary, later said that this was probably the only question ever asked of Pat Kenny for which he didn't have a ready answer. On the following weekend, *Sunday Independent* journalist Jonathan Philbin Bowman described that interview as the best of the week.

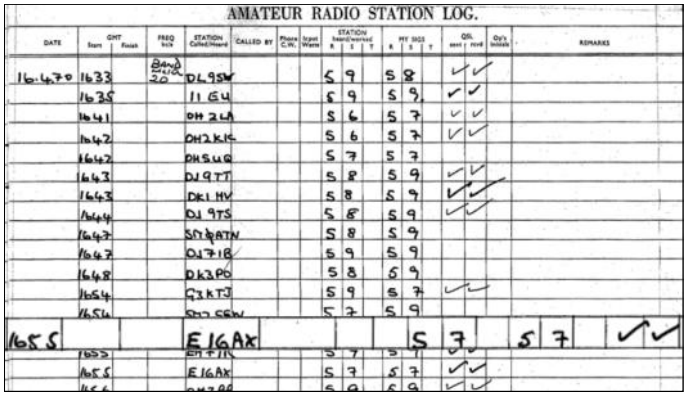
The archive recording of this delightful interview begins with King Hussein's 1961 Teilifís Éireann address and can be heard on *www.arrl.org/library-oral-history*. This was the first posting on the ARRL's Oral Histories Library, but with subsequent postings you may need to scroll down to find 'O'Sullivan, Bernie EI6AX.'

King Hussein was a colourful and charming character and, like very few others, a grand ambassador for amateur radio. He lived during turbulent times and, as his country's political leader and commander-in-chief, he was alternately the aggressor and the aggrieved. It was an age when most hams were spontaneously considerate, and well before any 'code of conduct' for hams became necessary. Where has it gone wrong—and why?

The legacy of King Hussein is one of inclusion, consideration and the goodwill that he spread to so many. For us today, the courtesy that he displayed on-air is worth remembering—and emulating.



Bernie O'Sullivan EI6AX in his shack and inset, in the early 1970's (Courtesy EI6AX)



AMATEUR RADIO STATION LOG.

DATE	GMT Start	GMT Finish	FREQ kcs	STATION Called/Heard	CALLED BY	Power C.W.	Input Watts	STATION heard/worked R	STATION heard/worked I	STATION heard/worked T	MY SIGS R	MY SIGS I	MY SIGS T	QSL sent / rcvd	Op's Initials	REMARKS
16.4.70	1633		Band 20	DL9SW				5	9		5	8		✓	✓	
	1635			II 6U				5	9		5	9		✓	✓	
	1641			OH 2LA				5	6		5	7		✓	✓	
	1642			OH2KK				5	6		5	7		✓	✓	
	1642			OH5UQ				5	7		5	7				
	1643			DJ9TT				5	8		5	9		✓	✓	
	1643			DK1HV				5	8		5	9		✓	✓	
	1644			DJ9TS				5	8		5	9		✓	✓	
	1647			SM5ATN				5	8		5	9				
	1647			DJ7IB				5	9		5	9				
	1648			DK3PO				5	8		5	9				
	1654			G2HTJ				5	9		5	7		✓	✓	
	1654			SM7SEW				5	7		5	9				
1655				EI6AX							5	7		5	7	✓ ✓
	1655			EH7IK				5	7		5	7				
	1655			EI6AX				5	7		5	7		✓	✓	
	1656			OH7RC				5	9		5	9		✓	✓	

Extract from JYI's first logbook with details showing his QSO with EI6AX. This is Hussein's first recorded QSO with an EI ham, two months after his first use of JYI.. (Courtesy hamgallery.com)

HF Happenings
Anthony Murphy EI2KC

Another winter has come to an end (although the cold weather might yet linger) and I hope it's been a productive one for you on the HF bands. It was a quiet winter from the point of view of major DXpeditions, but in fairness that has been the trend of recent years, with most DXpeditions taking place in the summer and autumn.

It was a quiet winter for me on HF, and while not chasing new ones, which were few and far between, I spent a lot of time writing a new novel and also taking photographs and playing music, which are among my other hobbies. My friends sometimes comment that with all my interests, they don't know how I find time for work!

80 metres – what a band, and what a challenge!
I have had quite a lot of fun on the low bands over the past few years, with a notable concentration on 80 metres in particular, where I have been doing quite well given the severely compromised nature of my inverted V dipole for that band, which is just about 30 feet at the apex and is dog-legged in such a fashion as to allow the whole antenna to remain within the curtilage of my own property. Some people are amazed that it works. I'm not. I've spent my whole time on HF since I got the licence in 2009 defying radio theory by seemingly doing the impossible. You should give it a try some time!

My excellent winter on 80 metres began as early as August, when we were still very much in the summer – when I managed a QSO on SSB using just 100 watts with Cyril, FR4NT, in Reunion Island in the Indian Ocean near Madagascar.

Two things acted in my favour for that contact. First was the fact that there was no pile-up, and in fact by the time I gave him a shout all the others who had been calling had already logged him. I found a quiet moment and called. Secondly was the fact that the noise floor was low on the band, which might be surprising given that it was August, but it was 10.37pm and, luckily for me, any electrical devices in the neighbourhood which might have given me a problem were off.

What better way to celebrate a QSO on top band with Navassa than to have a nice cuppa in a K1N mug!!!

The inverted V is resonant at the bottom of 80 metres – I specifically designed it so because I knew that my best chance of working DX on that band was on morse. It has a reasonable bandwidth, though, and I get an SWR of about 3:1 at 3.6Mhz. However, the SWR rises as I go up the band (naturally), and I would have assumed it was useless up in the DX portion of 80 metres, from 3.775 to 3.8 Mhz. However, I find that with a little bit of coaxing, my Icom IC-756PRO will tune it up there.

I knew that the antenna was capable of working DX, and perhaps one of the best contacts to confirm this was with the XR0ZR DXpedition to Juan Fernandez in November 2013. Of course, that contact was made in the morning time, on the grey line, and that's been a very important factor in some of my DX QSOs. I have found that most DX stations located in North America, the Caribbean, central and South America and the near to mid Pacific Ocean are all generally workable on our grey line, depending on various factors including atmospheric conditions, local noise (QRN/QRM levels) and indeed the type of antenna and power being used by the DX station.

The single biggest factor in favour of a small Irish station such as mine on the grey line is that the rest of Europe is in daylight and will have lost propagation on 80m, so I am not fighting against German, Italian, Czech and Spanish stations etc. Usually on our grey line, EIs only have to contend with G stations and maybe some F and EA stations. So, armed with this knowledge, I set out to improve my tally on 80 metres over the course of the winter. Here is a brief summary of that effort:

YV8AD, Venezuela, worked on SSB on the grey line running 100 watts on September 25th 2014. New country on 80m.
PJ5/OL8R, Saba & Sint Eustatius, worked with 100 watts on CW at 05:11z on September 26th.

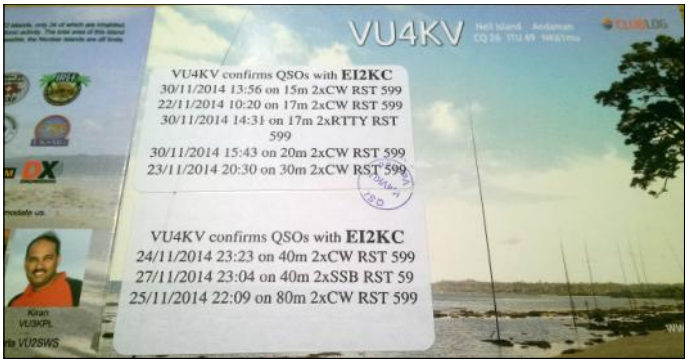
HC2AO, Ecuador, worked exactly on the grey line at 06:15z on the same morning. He came on just at the right time and I bagged him with just one call using 400 watts. New country on 80m.

V44KAI, St. Kitts & Nevis, worked in daylight at 07:00z on October 13th. It was a simplex CW QSO and I was running 400 watts. New country on 80m.

ZL4AA, New Zealand, worked at 07:03z on October 14th. This was a CW QSO and again I was running 400 watts. My log notes say that it took me a few efforts to ensure the QSO was a good one. Believe it or not, this was not my first contact into New Zealand on 80 metres! So it demonstrates what can be achieved with a bit of dedication using modest antennas.

JY9FC, Jordan, worked at 21:10z on CW running 400 watts. Another new country on 80m.

FT4TA, Tromelin DXpedition, worked with no small measure of good luck through a gap in the pile-up at 19:07 on



November 7th. I was particularly chuffed with this one.

TZ6BB, Mali, worked at 23:25z on November 12th, on CW. This was a new country on 80m, my 150th DXCC worked on that band.

VP2EIM, Anguilla, worked at 07:42z on November 14th, on CW, running 400 watts. New country on 80m.

VU4KV, Andaman and Nicobar Islands, worked at 22:10 on November 25th. This was one that I was very happy to get and was one of eight QSOs with this fantastic DXpedition, later confirmed by QSL card (see photo above).

HC2AO/8, Galapagos, worked at 08:13 on November 26th. Another fabulous DX contact. A number of hams from Ecuador HC2 were on HC8 Galapagos Islands and it was a fantastic mini DXpedition, giving me several slots. This was another CW contact with 400 watts. New country on 80.
OD5NJ, Lebanon, worked with some difficulty due to QRN and QSB at 23:10z on November 26th. Another 400 watt CW contact, and another new one on 80!

8Q7DV, Maldives, worked at 23:45z on November 26th on CW with 400 watts. Another new country on 80 metres. It was turning out to be quite a good week for new ones on 80!
HZ1BW, Saudi Arabia, worked at 22:39 on November 27th on CW. Another new one, although I was surprised I hadn't worked Saudi Arabia previously on 80.

ZD8O, Ascension Island, worked through considerable static crashes and with a weak signal at 22:48z on November 27th. A CW contact. I wasn't 100% sure of the QSO due to the QRN but he later confirmed the contact via Logbook of the World. Another new one.

9K2HN, Kuwait, worked at 00:14z on November 29th in the CQWW CW contest. Another new one.

A71BX, Qatar, worked at 00:26z on November 29th in the CQWW contest. I remember telling you about my efforts in the 2012 CQWW CW contest to bring my total number of confirmations on 80m over 100 by working only on that band in the contest. That effort was successful. Contests can be a very handy means of working DX that might not be active at other times! Another new one on 80.

VP9/N3AD, Bermuda, worked at 01:01z on November 29th in the contest. My log says he was very light and the QSO was hard work. Yet another new country on 80 metres.

XE2B, Mexico, worked at 07:47 on November 29th in CQWW. Another grey line QSO. Another new country on 80.
S01WS, Western Sahara, worked at 23:08 on 10th December. This was a CW QSO with 400 watts. New country on 80m.

C5X, The Gambia, worked at 06:58z on 20th January 2015. This was a 100 watt contact. I called him while waiting for the linear to warm up and he got me after two calls! This was an excellent DXpedition which I worked on CW on seven bands. All QSOs were confirmed in a short time on LoTW. It wasn't a new country worked, but it was a new confirmation.
HV0A, Vatican City, worked at 22:20z on 25th January. This was a CW QSO with 400 watts. New country on 80.

S01WS, Western Sahara, worked this time on SSB, using just 200 watts, at 22:27 on 27th January.

HH5/KC0W, Haiti, worked at 23:28 on January 28th on CW using 400 watts. This was not a new country – but was only my second QSO with Haiti on this band. I was surprised to get him at night time – the Caribbean contacts are normally more favourable in the morning time.

RI1ANR, Antarctica, worked at 23:01z on February 3rd. This was a simplex QSO on CW. I had heard him the previous night but was unable to make it through. On the night of the 3rd, my noise floor was very low and there were no static crashes so I could hear him, although there was QSB on him. Another fantastic DX QSO on this wonderful band and another new country on 80.

K1N, Navassa, worked at 07:38 on February 7th. This extremely rare DX entity was activated by a fantastic DXpedition and I was chuffed to get them into the log on all HF bands except 30 metres. On the morning of the 6th, I had spent an hour and a half trying them but they were light and working mainly North America. On the 7th, they were stronger and working EU. By the time I worked them most of Europe was in daylight so it was relatively easy. New country on 80 metres!

I now have 167 countries worked on 80 metres, of which I have 136 confirmed. It's been a fantastic winter on that band. As you can see from the above, the QSOs were all made either late in the evening around 10pm to midnight, or in the morning just before sunrise here. If you're reading this and you're interested in DX on 80 metres, I would encourage you to try to emulate my efforts. If you don't use CW I reckon you will find it much more difficult, so I would encourage the use of this mode for working DX in general. All of the above countries were worked on my inverted V. It's an antenna that some hams say shouldn't work. But it does. And even though it's compromised by necessity, it's proven, to me anyway, that a lot can be done from a small garden.

Before I finish, I should also tell you that after trying for five mornings in a row, I eventually did work K1N Navassa on 160 metres – an almost impossible feat. I have found that my 80m/40m/30m fan inverted V dipole system has some resonance on top band. I worked 55 QSOs in the Stew Perry contest in December just to prove that it's not impossible. OK, they were mostly European contacts, but hey, I'm not expecting to work Australia! But even that can be done, as Paddy EI1DG proved. See separate article on Paddy's rare DX contact into VK on top band using a small antenna.

Deliberate QRM

After my recent article about tracking down and punishing those who are responsible for causing deliberate QRM on the ham bands, I was delighted to read about two interesting and timely developments. The first was an article on the ARRL website revealing that two hams in the USA who had caused deliberate QRM on 20 metres were given substantial fines – in one case $11,500. You can read more about that on the ARRL website at *http://www.arrl.org/news/fcc-fines-pennsylvania-ham-11-500-for-causing-intentional-interference*.

The second was an effort by the K1N Navassa DXpedition team to deal with DQRM by trying to locate the QRMers using triangulation from reports filled out on their website. In a pioneering and very welcome development, K1N provided a dedicated page on their website with a form (see picture) which could be filled in providing details of the DQRM including direction, signal strength, time and date, etc. I used the form to report DQRM on 15m CW, where someone was sending "up up up" continuously for several minutes, all but obliterating the DX station.

It was noted that while the notorious CW DQRMer who signs as "EAHSYL" did make an appearance or two, he or she was generally not nearly as active as with previous DXpeditions. My own experience was that the DQRM was definitely down on, for instance, the FT4TA Tromelin DXpedition, but there was some serious DQRM on K1N on 40 metres SSB caused by two stations sending CW and other silly behaviour.

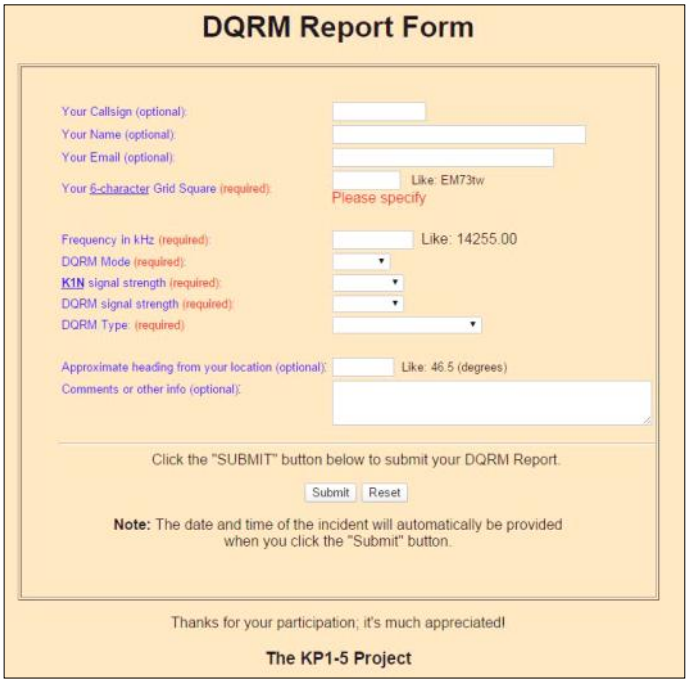
Hopefully the reports filed on the Navassa team website will lead to DQRMers being identified and duly punished, but it has to be cautioned that unless the regulatory authorities in the countries concerned are willing to act, the whole thing might prove fruitless. It is, nonetheless, a very welcome development and one that hopefully will be adopted by future DXpeditions.

Recent DXpeditions

EP6T Iran

The EP6T DXpedition to Iran in January was one I had great hope for. I had only worked Iran twice before, and thankfully one of those QSOs was confirmed on Logbook of the World, so that took the pressure off somewhat. I found it to be a very difficult DXpedition to work, much more so than I had expected, and in the end worked them just four times, and twice on 17 metres, so effectively I got three bands - 15m, 17m and 20m. This was very disappointing. In their defence, the EP6T team suffered from horrendous noise levels, and I take some solace from the fact that no EI station worked them on 80 metres. So, in the spirit of ham radio, and accepting that sometimes things just don't work out as planned, I have to hope that there will be some future DXpedition to Iran which will offer me hope for QSOs on 30m, 40m and 80m. And who knows, maybe even top band!!

Heartiest congratulations to all who made it into the EP6T log (there were 33 Irish call signs logged). Top of the bunch was Doug EI2CN with 16 QSOs, followed by Don EI6IL on 10, Ark EI9KC and Michal EI3KG on 7 apiece and Trevor EI2GLB on 6. Well done on what was a difficult task.



C5X The Gambia

In mid-January, a small group of British hams activated The Gambia in western Africa using the call sign C5X. This turned out to be a wonderful little DXpedition using Spiderbeams, verticals and dipoles. They concentrated quite a lot on CW, and I would have to say that their morse operating was flawless. I managed to work them on seven slots, all CW, from 12m through 80m. They were very quick to upload their logs to Logbook of the World, meaning that confirmation of the QSOs was prompt. I was particularly delighted to get them on 80 metres, using just 100 watts.

Congratulations to the 35 EIs who made it into the log, with particular praise for EI9KC and EI8FH on 10 slots apiece, EI6FR and EI6IL on nine, EI7CC and EI3KG on eight each, and EI2KC and EI2GLB on seven apiece. Great work.

K1N Navassa

We've been talking about this for a long time. KP1 Navassa, an uninhabited and disputed island in the Caribbean Sea, has long been one of the rarest and most wanted DXCC. It was the second most wanted DX entity on both the Clublog most wanted list and the DX publishing list, behind DPRK North Korea (P5), which still holds the #1 position.

The much-vaunted K1N activation of Navassa in February just gone was the first amateur radio operation from this island in 22 years. We knew it was going to be challenging, for even though the Caribbean is generally quite workable from Ireland, the pile-ups were always going to be horrendous. And that's how it turned out to be, but with at least one huge factor in our favour.

With DXpeditions in the Middle East and the Indian Ocean and parts of Africa and Asia, Irish radio amateurs are at the "back end" of Europe, so to speak, and therefore we battle against all of the big guns in Germany, Italy, Poland, Czech Republic, etc, to get that all-important QSO into the log. However, with Navassa and the Caribbean and South American DXpeditions, and indeed some of the near Pacific stuff, we are positioned much more favourably at the "front end" of Europe, with all the Italians and Germans behind us!!

With these major DXpeditions involving "rare ones", my approach is generally sensible. The main aim is to get a QSO and get the all-time new one (ATNO) into the log. Once that's done, a secondary aim is to work them on different modes. A third aim, with some, but not all activations given the compromised nature of my low-band antennas, is to get a QSO on 80 metres. I knew this was eminently possible from EI, especially on the aforementioned grey line, where a great deal of my DX QSOs into the Americas and the Caribbean and near Pacific were made.

However, these possibilities can be affected by a number of factors, not least conditions on the low bands, which were reported to have been generally quite noisy during the winter of 2014-15. Also, the possibility of a QSO greatly depends on what antennas the DX station is using, and also their noise floor. EP6T was a case in point, demonstrating that a high noise level can make it difficult or impossible to get DX stations into the log.

Getting the first QSO is always the one that gives me the greatest anxiety. This was particularly the case with K1N because things were busy for me. When I did eventually knuckle down I was rewarded. I worked them first on 20m CW, followed by 17m CW. On Saturday February 7th I worked five slots in one day which was a great thrill. These included 40m CW at around half past midnight after just two minutes of trying, and then 80 metres CW on the grey line at 07.38. This was also fairly easy, although the previous morning I had tried for an hour and a half without success but on that day they seemed to be taking NA only (although not calling NA only). Towards the end of the DXpedition, I reckon it would have been fairly easy for any EI with a bit of CW to work them on 80 - even with low power. By the time the grey line is on EI, the rest of Europe is in daylight, so all the big EU guns are gone to the higher bands.

But the biggest thrill of all came on the morning of Thursday 12th February, when I managed to work Navassa on 160 metres, using just my 80/40/40m inverted v fan dipole. What a thrill it was, having tried for the previous three or four mornings, to finally hear that wonderful sound "EI2KC EI2KC 5NN" in the noise. I knew I had a chance of working them that day because, in contrast with previous mornings when they struggled to hear any of the big G, F and EA stations, this time they were working the western fringe of EU at a good rate. Obviously their noise level had dropped. I got in through sheer determination with a bit of good luck thrown in. It was, in some ways, the contact of a lifetime. It's one that will live long in the memory.
Towards the end of the activation, K1N was looking for people who needed it as an ATNO only, so with 13 QSOs in the log, I was more than happy to step aside from the shack and let the small guns fight it out for a QSO. I worked them on all HF bands from 10m through 160m with the exception on 30m. But the way I look at it is this - I have to leave something for the future!! And I got them on SSB, CW and RTTY. What more could I ask for?

Unfortunately, because they did not use the leaderboard feature on Clublog, I am unable to check exhaustively to see how many EIs made it in. The following tally of the top performers is based on all those regular DXers I could think of. If I miss anyone from this list of those who got 10 QSOs and more, I apologise. Do let me know and I will make sure to include you in the next issue.

21 QSOs - John EI7BA and Doug EI2CN.
19 QSOs - Mark EI6JK and Don EI6IL.
13 QSOs - Anthony EI2KC, Trevor EI2GLB, Michal EI3KG, Erik, EI4KF.
12 QSOs - Ark EI9KC and Adam EI5JQ.
10 QSOs - Declan EI4GJB, Gerard EI5KF and Declan EI6FR.

Well done to everyone who worked them. It's nice to be part of this ham history, so to speak. It could be a long time before we hear Navassa on the air again.

ZL7/F8FUA

I can't wrap this section up without mentioning Alain F8FUA, who has been in my shack and who I've worked on previous DXpeditions. This time Alain was on Chatham Island ZL7 and I managed a QSO on 20 metres SSB at 8.41am on February 10th. I was surprised to hear him at all, given that he was using just 100 watts into a Buddipole antenna. But he heard me calling and put me in his log, along with several other Irish stations. I'm sure he will tell us more about his adventure when he comes back to Ireland again.

Forthcoming DX and DXpeditions

3XY Guinea

Michael, PA5M, will once again be active as 3XY5M from Guinea until sometime in April. Activity will be limited as he

ZL7/F8FUA Alain's radio setup and his Buddipole antenna

is there working for the World Food program. Operations should be on 80-10 meters using CW, SSB, RTTY and very little PSK31. Main activity will probably be during his local evenings, after 1800z, using wire antennas and a FT857. QSL via PA7FM. For possible updates, see: *http://www.3xy5m.pa7fm.nl*

FR Reunion Island
Michel, F5PLC, will be active as FR/F5PLC from Reunion Island (AF-016) between April 16th and June 16th. Activity will be QRP CW only (w/1.5 watts using a KX1 and vertical on fishing-rod), and mostly 20 meters and maybe 30 meters. QSL via his home callsign, direct or by the Bureau.

PQ0T Trindade and Martim Vaz Islands
Fábio, PP5BZ, has told the OPDX bulletin that his team will be active from Trindade Island this April using the callsign PQ0T. The team will consist of Fabio/PP5BZ, Jaime/PP5JD and Claudio/PY3OZ. They have received a release from the Brazilian Navy to operate only three days from Trindade. Thus, in order to accommodate the whole DX community, they ask everyone to avoid duplicate or even contacts on bands/modes that they already have for the DXCC Challenge. ATNOs and UNIQUEs will be their priority. Activity should be on 80-6 meters with two stations on the air simultaneously. Any and all help for the DXpedition to Trindade Island will be very welcome.

For more information on how you can contribute to the PQ0T DXpedition 2015, please contact them via E-mail at: *pp5bz@hotmail.com*

V6 Micronesia
Operators Keith/GM4YXI (GM5X) and Chris/GM3WOJ (GM2V) will be active as V6Z from Blue Lagoon Resort on Chuuk Island (OC-011) between March 27th and April 9th. Activity will be on 80-10 metres (possibly 160m, but no 60m) using CW and SSB. They plan on being in the CQWW WPX SSB Contest (March 28-29th). However, it is unlikely to be a serious effort because they will still be trying to get antennas erected over that weekend and generally getting into full DXpedition mode. Keith states, "As with our previous efforts (ZK2X, ZK2V, VK9CZ, A35X, A35V), the two of us will be QRV as much as possible. Antennas will be vertical Moxon beams on 10-20m and verticals on 30-80m. The QTH looks as if it should permit us erecting antennas close to the beach but the location is 'untried' so we will know more when we get there." Look for the logs to be uploaded daily to LoTW, as well as possibly real-time logging to ClubLog if the Internet access is good. QSL via N2SL. A website is under construction and should be more developed over the next couple of weeks at: *http://www.v6z2015.com*

H44 Solomon Islands
Christian EA3NT plans to be active from the Solomon Islands as H44NT during the following dates: March 11-14, 2015 — from either Russell Islands OC-168 or Florida Islands OC-158. March 15-16, 2015 — from Bellona Island OC-127. He will be carrying lightweight equipment and running on solar panels and a car battery if no power is available. (Max. 100w and vertical dipoles).

On March 17-18, Christian will also try to activate any of the islands in the OC-137 group during his stopover in Brisbane, before proceeding to Sydney to take his flight back home, signing as VK4/EA3NT. Date: 17 – 18 March 2015. Keep an eye on the H44NT QRZ.com page for updates and full info.

D4 Cape Verde
Lukas, HB9EBT willl be active as D44TEG from Tarrafal, Santiago Isl (AF-005), Cape Verde between March 15-27, 2015. QRV on 40-10m, CW only. QSL via home call

VU4A & VU4I Andaman & Nicobar
Andaman and Nicobar will be on air with specially issued call signs for HAMTECH 2015 organised by National Institute of Amateur Radio (NIAR). The call signs are VU4A – Operated by Foreign Radio Amateurs, and VU4I - Operated by Indian Radio Amateurs. Location: Port Blair, Andaman & Nicobar. Dates: 6 to 18 March 2015. More info at *http://www.niar.org/*

CE0Z Juan Fernandez
By the time you read this, the 3G0ZC DXpedition to Robinson Crusoe Island on Juan Fernandez archipelago will probably be over, so a full update will have to wait until the next issue. But just to say good luck to the three Irish hams who are part of the team – Dave EI9FBB, Ark EI9KC and Mark EI6JK. I hope they have a fantastic time and I hope that you all get a chance to put this relatively rare one into the log.

Big ones
There are some big DXpeditions and fairly rare ones coming up in the next year, but many are a good bit away in terms of time so I won't go into detail yet, but we could see, between now and this time next year, the likes of Chesterfield, Heard Island, Kerguelen, Aves Island, Palmyra, South Sandwich and South Georgia, among others, on the air. Exciting times to be DXing!

Slán go fóil,
Anthony EI2KC

Postscript: EI - VK on 160m

Paddy EI1DG has been in touch with HF Happenings to tell us about an excellent QSO he had with Steve VK6IR. What's remarkable about the QSO is that he made it on top band using just a 32ft home brew loop antenna. The QSO was at 21:04z on January 2nd.

Paddy says: "I had been monitoring and trying to connect but had no luck from early December. However, on the 2nd of January 2015 at 21:04 UTC I worked him via JT65. It was very close to his sunrise so it was a grey Line QSO. I was running 50w to my 32ft magnetic loop antenna. Reports exchanged were: my report from him -24dB and his report from me was -17dB."

"It took two attempts to exchange reports and log the QSO as valid. I now have VK6IR worked from 160 to 10m including WARC via JT65. I use PSK Reporter and Hamspots.net to see who is receiving my signals and where. QSO has been confirmed with LoTW."

Paddy advises that if you're looking for a very quiet antenna, you should look at magnetic loops, especially on the G0CWT web page. This is a homemade antenna designed by Ben G0CWT (www.g0cwt.co.uk) who took out a patent on this

antenna. "As I wanted to try 160m but don't have the space, this loop appeared to be a workable solution to get on this band from a small garden," says Paddy. "He has two versions of magnetic loops and I went for the mobile version which is an 8x8 square 2.5mm copper wire. I used 32mm PVC tubing to make the square and I can rotate it as I have a swivel in the top section and I use the armstrong method to turn it.

"I now have 33 countries worked on this simple antenna including four states in the USA."

Paddy is wondering would this be the first EI-VK digital QSO on 160m ?

EI1DG's implementation of the G0CWT mag loop

The mag loop matching system

Changes to Echo Ireland

The DXCC listings are now available on the IRTS website *www.irts.ie/dxcc*

IRTS contests are listed on *www.irts.ie/contests* together with information on other major events.

Each month, our e-publication EiNews lists contests for the coming month. If you're not already on the circulation list for EiNews, sign up at *memrecords@irts.ie*

New IRTS Contest Manager

Joe Ryan EI7GY has been appointed as Contest Manager, in succession to Thos Caffrey EI2JD who, because of other commitments involving extensive travel, has stepped down as Contest Manager after many years. Our thanks to Thos for all his work.

Contest results should continue to be sent to *contestmanager@irts.ie*.

Any remaining paper logs should be sent to Joe EI7GY, QTHR

Radio News Bulletins and Readers

Sunday				
Dublin	1100	7.123	SSB	Sean EI7CD, Ger EI4GXB, Paul EI2CA
Wicklow	1130	3.680	SSB	(as Gaeilge) Paddy EI7GK, Danny EI6GS
Dublin	1145	145.525	FM	Tony EI5EM, John EI7JG, Frank EI6EF, Liam EI3HK
Clare	1200	3.650	SSB	Ger EI4GXB, Sean EI7CD
Mayo	2000		FM	145.600, 433.450, 70.375, 50.450 - Padraic EI9JA, John EI7FAB, Mike EI2EO, John EI3JM, Dominic EI9JS
Tipperary	2030	145.450	FM	Tommy EI2IT, Eddie EI3FFB
Monday				
Cork	2000	145.750	FM	Vincent EI7HN
Limerick	2000	145.725	FM	Brian EI9AL, Simon EI7ALB, Ger EI4GXB, Liam EI7DSB Tony EI2AW
Louth	2000	145.675		Thos EI2JD, Anthony EI2KC, Jim EI2HJB
Tuesday				
Waterford	2130	145.650	FM	David EI6GVB
North Cork	2000	430.925	FM	Lisa EI9GSB

Excerpts from the HX files

Pat Fitzpatrick EI2HX - Excerpt 031

Hello and welcome to Xtract 031 of the HX files.

In this issue of Echo Ireland I would like to talk about some of the aerials used /portable (and at QTHR) and the means to fix them in place.

Photo 1

In Photo 1 you can see some aerials mounted on a small portable mast that has been used many times, all the aerials on it are for 23cms (1.2GHz). The top one is a vertical and the others are various types of beam aerials that would be classed as a regular type of beam; others are a loop Yagi and a circular polarization type. Coaxial cable is used to connect the transceiver to the aerial but on some occasions the transceiver is screwed directly to the aerial with a remote lead carrying the power, audio, video and TX/RX switching from the car to the mast mounted transceiver.

Photo 2 shows one of the stands I use. I drive over the base of the stand and the weight of the car holds it in place. Stays are not needed. This base unit was the Mk1 type; It became awkward to transport when I got a new model

Photo 2

car so the base unit was left aside for a few years. Then I decided to modify it, firstly by separating part of the base frame and making it wider by inserting an extra piece of box metal so some hinges could be welded in place.The rigid support arm on its right side was cut away and its ends modified so that each end was attached to the base by a bolt so that when one of them was removed the unit could be folded flat for transporting and storage. The base can be seen again in photo 3 along with some of the mast bases that were bought / made over the years.

Photo 3

Some of the masts would take a couple of people to erect safely, but others could be attached to the towing eyes or the tow Take care when you are on your own working /portable, you could end up with some damaged aerials, or damaged car as the pole with the aerials attached could be to long and will be top heavy.

Dismantling can be the most dangerous regardless of the weather, as fatigue can set in after a long day and with possibly cold / wet hands you could lose your grip. If you are on your own just bring something you can safely manage by yourself.

Photo 4

In photo 4 you can see some of the other aerials that did not make it onto the mast; these bow tie aerials can be used individually or some of them could be placed into the panel aerial case you see them resting on. (The panel aerial is for use between 195-197 MHz.) When it comes to connecting your aerials to your transmitter other than coaxial cable, the range of fittings can be bewildering as can be seen in photo 5.

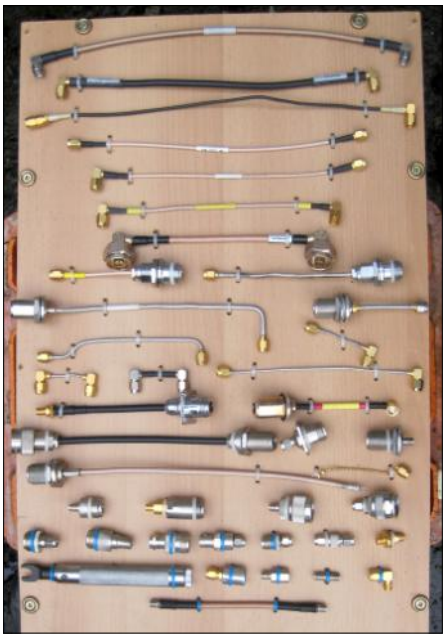


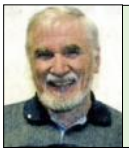
Photo 5

Photo 6 shows a dish and on the bottom right of it is an aerial that looks like a can which could be used as is for some local use, or it can be used as a launcher and lined up to feed a dish like the one it is sitting on, but some framing, and exact measurements would have to be done to attach the can to the dish at the right distance but that is a job for another day.

That's it for this issue of Echo Ireland.

73 Pat.

Photo 6



Tountinna Repeater IO52TU

Simon Kenny EI7ALB

The Beginning
For almost 40 years the Limerick Radio Club's repeater site on Tountinna Co. Tipperary has played a key role in the activities of the club. Around 1979 the idea for a 2m repeater took hold when Ted Dames W2KUW (RIP) - a stateside amateur and a good friend of LRC, and Terry EI4BK called to Kilkee to visit Eamon EI5AJ (RIP) at his holiday mobile home. It was suggested that it should be possible to contact Limerick from Kilkee on 2m via a repeater. Ted W2KUW presented a 2m repeater to LRC, and Dr. Owen-Jones EI1EM with Dave Tocher EI2AMB, set up the repeater on test at NIHE (now UL). After several site surveys and tests, the repeater was commissioned and installed on Tountinna. Sean EI3B (RIP) was instrumental in suggesting the site. EI9BG (RIP) with one of his sons drove a tractor and trailer loaded with concrete blocks, sand, cement, etc. to construct the present repeater building. This was the first 2m voice repeater to be set-up in Ireland. The site also provided a 70cms repeater before that repeater was moved to Knockfierna.

Digipeaters
The advent of the personal computer brought a new dimension to amateur radio - namely Packet Radio. LRC decided to set up 2m and 4m digipeaters on Tountinna with the call sign EI4PKT. This would prove to be a very important link in the national EI packet radio network. Tom EI3AL and David EI4DBB set it up along with a local bulletin board, which Dermot EI2GT ran from his QTH for a number of years. The digipeater packet radio facility was decommissioned some years ago.

IRLP
Tountinna was again key to providing access to Internet Radio Link Protocol (IRLP) over the 2m repeater. Initially IRLP ran on a desktop PC at the QTH of Ger EI4GXB before being ported to a Raspberry Pi by Liam EI7DSB. and it now runs from Liam's QTH.

New Mast
In the mid 2000's an attempt to move to Keeper Hill was aborted due to difficulties with QRM at the site. More recently the main repeater single pole mast was replaced with a triangular tilt-over mast. There is also a standby single-pole mast with 2m antenna on site.

Digital Voice
Over the years, the 2m repeater, control unit, masts and antenna have all been upgraded and replaced where necessary. In October 2015 the club decided on going digital on 2m. Several options were brought to club members and after due consideration the Yaesu DR-1XE was chosen. The main deciding factor was that it offered a transition path for existing 2m analogue rigs to digital modes. In Automatic Selection Mode (ASM) the DR-1XE will automatically set the output mode to the incoming mode i.e. analogue in – analogue out; digital voice in – digital voice out. Of course, analogue rigs will not be able to decode digital voice – it will just appear as white noise on analogue receivers. The DR-1XE has been fully tested and reports on analogue and especially digital voice are excellent. It can be configured for 2m or 70cm. A lot of the functions which previously relied on separate control units are now resident in the repeater itself. We look forward to much greater use being made of the 2m DR-IXE repeater especially through the use of digital modes on what may be the first digital modes repeater in EI.

Tountinna was a challenging site on which to install a repeater and great credit is due to the foresight and hard work of LRC members at that time. Even today the site is still very challenging especially over the winter months. The tradition of the Limerick Radio Club of pushing the boundaries and following new developments continues and Tountinna will continue to be a key part through exploiting the full functions of the DR-1XE. A great debt of gratitude is due to the many members of LRC who in one way or another helped keep the club to the fore in Amateur Radio and at the same time mentoring and encouraging new members.

1989: 2M Repeater Site Mike EI2IX, Alan EI8EM, Maurice EI3JF, Tom EI9BG (RIP)

1989 : Limerick Radio Club Members at the 2M Repeater Site Tony EI2AW, Tom EI3AL, David EI4DBB, Tom EI9BG, Alan EI8EM, Colm SWL, Dermot EI2GT, Mike EI2IX, Liam EI4GB and Maurice EI3JF

2010: Installing Tilt Over Mast: Chris EI9GAB, Dave EI2GBB, John EI6IW, Jerry EI3JU, Dermot EI2GT, Ger EI4GXB

Big Guns
Anthony Murphy EI2KC

Should the "big guns" step aside to let the small one work rare DX?

One of the most widespread complaints that I hear, and indeed read about in ham radio related internet forums and even on the DX clusters, is that many DXpeditions are unworkable by smaller, 100-watt stations because of the "big guns" and "power lids".

Some 100-watt stations bemoan the fact that they are unable to break a pile-up for a rare one, and, in exasperation and frustration, and perhaps with a touch of jealousy, they blame this failure on the persistence of the larger stations.

The question here is, are they right to do so? Are the small stations right to criticise the big stations for not "standing by" to give the small guns a chance? In some ways, it's a subjective question. Those with big stations will naturally say no, while the ham with limited space for antennas who can only run 100 watts will undoubtedly say yes.

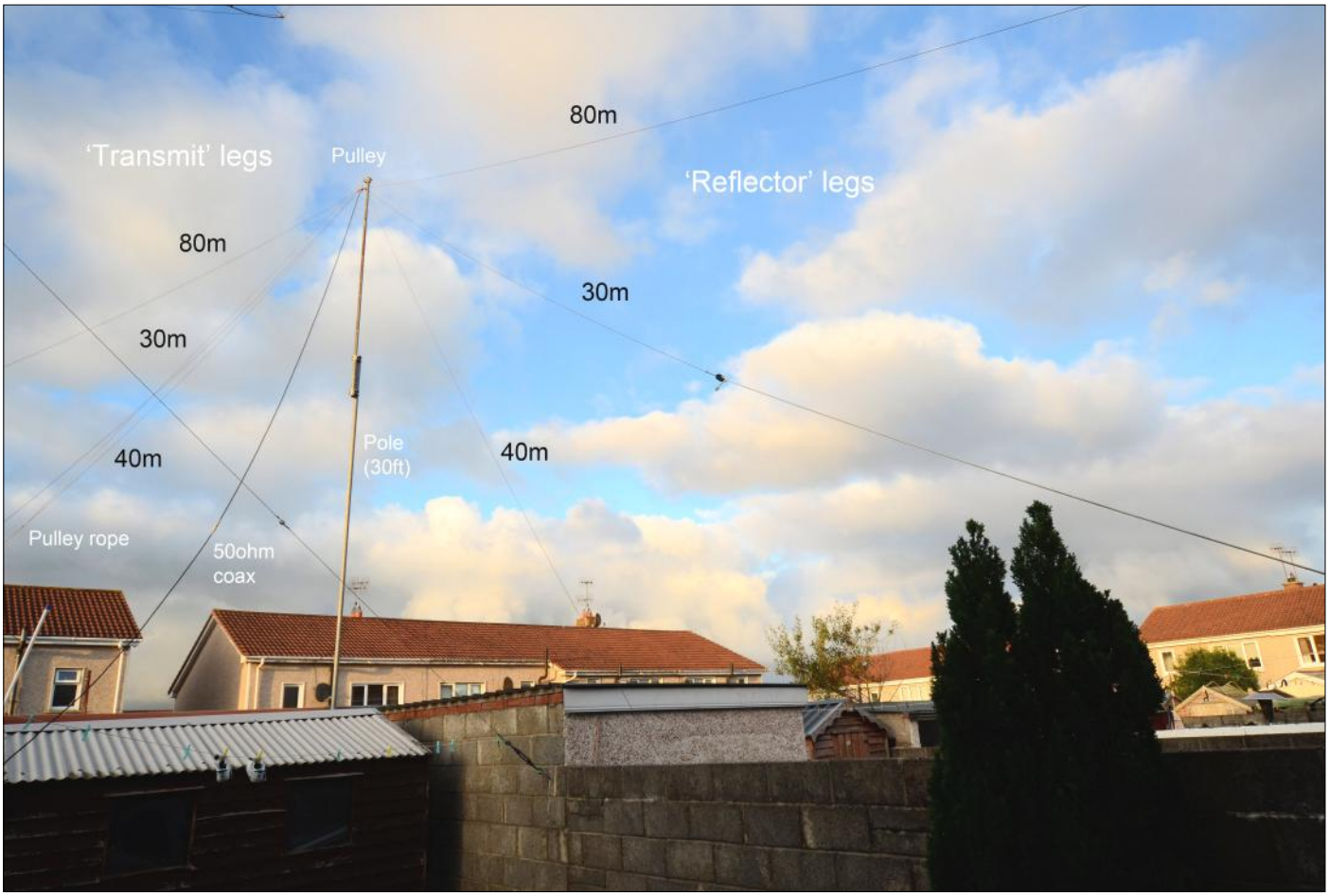
There is certainly an argument to be made for repeating the excellent effort of the K1N Navassa team to allow only those who needed KP1 as an all-time new one (ATNO) to call on certain band slots towards the end of their activation. This is most welcome. It helps to level out the playing field for those hams who, for one reason or another, are equipped with transceivers capable of 100 watts maximum, and sometimes less, and indeed restricted antennas.

However, while the practice of trying to allow the ATNO-hunter get that rare chance to get into the log is a welcome one, the idea that the big guns are somehow responsible for the failure of the small guns to get into the log is largely a misplaced one.

As a DX hunter, the responsibility for maximising the potential of your station, even if it does have a compromised location, lies with you. The responsibility for ensuring that your antenna system performs to its best capability – even in cases where money is in short supply and large investment is not possible – lies with you. I've been there. I've had antennas that were built on the cheap.

DXing is a skill and a passion. You must become skilled at it. And you must be prepared to invest large amounts of time into this particular aspect of HF radio. While it is possible for wealthier newcomers to the hobby to erect super stations almost immediately, and consequently to work the DX more easily, it is much more common to find hams starting off with simple antennas and very modest stations, and to build them up over time.

This is certainly how it has been for me. And that's why I have a strong opinion about the whole question of big guns versus small guns. I was the small gun. And in many ways, I still am. I am able to compete with the big guns because of several factors:



Nested inverted Vees at EI2KC

- I have improved my antenna system over the five years since I got licensed.
- I have invested time and money in improving my station.
- I have tried to learn the skills involved in hunting DX and gained valuable experience with each and every new activation.
- Most importantly, I have spent a lot of time at the radio.

When I worked the ZL8X Kermadec Island DXpedition on three bands in late 2010, it was not because the big guns took a standby to let the little fish in. Those contacts were made with a battered old six-band Butternut vertical antenna which at that time was mounted five feet above the ground on a garden wall with absolutely no radial system and not even a proper ground rod! My power output was 100 watts only. My antenna setup was far from ideal, and some would say it should barely have worked at all. But it did work. I logged ZL8X on 20 metres SSB, 40 metres CW and 30 metres CW. I worked this station 17,200km away using the most modest equipment. And I worked them first on SSB (just in case anyone correctly points out that it's easier to work DX using CW).

Admittedly, it can be no fun being stuck in a pile-up with just a wire or a vertical and 100 watts, competing with all the big gun stations around Europe using a kilowatt or two and a four -element beam on the top of a mountain. This makes DXing more challenging. In my opinion, it also makes it more rewarding when you do get through a big pile-up.

It may well be the case that some of those who are complaining about not being able to break the pile-ups are not putting in enough effort. I believe that this is likely to be the case in some instances. With modest antennas and relatively low power, it can sometimes be tough getting through. It requires effort. But even bigger stations with power have that difficulty, depending on the severity of the pile. The big guns don't always work the DX with just a few calls. They too sometimes have to spend half an hour, or more, trying to get through. As I said, DXing is a skill and a passion. Without passion, you might not be willing to devote the time required to get that ATNO through a substantial pile. Without skill, you may fail to notice where the DX station is listening, and that's a key area of skill that perhaps some would-be DXers fail to understand. A DXpedition might be saying "up" or they might say "up five to ten", or perhaps their listening spread is greater.

One way or another, it is important for the DX chaser to really work the second VFO and find a pattern if there is one to be discerned. I've heard that some would-be DXers have unrealistic expectations. Working with, say, a G5RV and 100 watts, is it realistic to expect to be able to log the rare ones without putting in hours of effort? I would say no. And yet, modest equipment can sometimes perform excellently and get you in the log quicker than you thought. My 40m QSO with Kermadec has a note in the log that says I only spent a few minutes trying. The 20m SSB QSO took place in favourable conditions, when both Ireland and Kermadec were on the grey line. It's important for the small gun to use conditions to his or her advantage!

I would suggest, with absolutely no doubt, that any Irish ham who can do CW could have worked K1N Navassa on 80 metres using low power. There were several mornings when, in the time frame 7.30 to 8am, they were calling with hardly anyone coming back. And with the grey line on us, the rest of EU was in daylight and unable to hear them. I'd say anyone could have worked them, no matter the antenna, and probably on less than 100 watts. There would have been no need for any big guns to step aside, as they had all worked K1N on 80 previously.

With enough time and effort, I believe most DX chasers can get at least one QSO with each DXpedition, no matter how rare. Sometimes the really distant small-antenna activations in the Pacific can be very difficult to hear, so it's understandable that sometimes it just won't be possible.

But the reality is that no DXer should have to step aside to allow another one in – no matter how much of a contrast there is between their antenna systems. I know several 100-watt DXers who are, with sheer effort, totting up new DXCC on a regular basis. And some of these guys have no CW, so all their new ones are being worked on phone (or digital), making it even more of a challenge!

Some day, with enough investment of time (and money if you're lucky to have it to spend on your hobby), and with the honing of your skills through experience, you will look back at your "small gun" setup (I sometimes refer to my station as a peashooter!) and will cherish the fact that you could work the rare ones with your humble station. And then, with your big four-element SteppIR and your 400 watts, you will know that being a big gun isn't the be-all and end-all, and that you will have developed sufficient skills and familiarity with DXing that each QSO will still bring you joy. And you won't want to stand by for the small guns – you'll have invested too much time, money and effort in your station to allow that. And anyway, you will know that the small guns will likely get through, if they try hard enough...

Butternut Vertical at EI2KC

James A. Carmody EI8KB / NN5O

An Appreciation - Declan Horan EI9FVB

My friend James A. Carmody, who passed away December 6, 2014 after a short battle with cancer, was a very good friend to Kerry Amateur Radio Group. Jim was an astute lawyer and arbiter by profession and had a long time interest in ham radio and his Irish heritage. He is survived by his wife Tippy, daughter Leigh Carmody, son Paul Carmody, daughter-in-law Teresa Carmody, granddaughters Emma and Zoe Carmody, brother Jerry Carmody (KN6WE), sister-in-law Dian Carmody, nephews Jerrod (KG5BOU) and Zephan Carmody, and nieces Suzanne and Michelle Stroebe.

Jim was a member of the Texas DX Society, and was an avid DXer and loved DXpeditioning, especially from his ancestral home in Ireland where he held the call signs EI2VNO, and later his lifetime call EI8KB. He was active from Caherciveen during several CQWW SSB and ARRL DX contests.

Jim's visits to Ireland would see him hiring out a campervan and return to his favourite place for contesting, Mannix Point, Caherciveen. His last trip here was for the CQWW SSB contest on 26/27th Oct 2013. Torrential rain and strong winds over that weekend did not deter Jim, as he worked 861 QSOs on 10m only, using his Sigma 40XK multiband vertical, with the Diamond BB7V multiband vertical as a backup, and his FLEX 6300 SDR. During Jim's yearly visits, he became great friends with members of Kerry Amateur Radio Group, especially John EI9JO who was always on hand to assist in preparation for the contest, and to extend a "Céad Míle Fáilte". Jim generously donated the BB7V vertical to KARG during his 2013 trip. He was already planning a return in 2014, but sadly never made it.

In 1983 Jim operated as FP0HXP from St. Pierre & Miquelon. He was one of the first American hams to obtain a license in Czechoslovakia where he operated as OK8AGG during the 1989 ARRL DX Phone Contest. His last DXpedition was as V31JA from Belize in March 2014.

One of Jim's favourite rigs was an Elecraft KX3 all-mode ultra-portable transceiver running 12 watts which he used on several of his trips. He would set up his station in hotels as far away as Japan, but always managed to make the QSO. Jim never forgot his ham radio beginnings and still treasured his Hammarlund HQ-129X receiver while still embracing the newest technology with his new FLEX 6300, and running remote with a TS-480SAT to his friend Nizar - K0NM's ranch.

Jim had made several QSOs with NASA and had a strong interest in space programs. With his love for international travel and reaching out to everyone he met, Jim also became friends with Russian cosmonaut Musa Manarov.

Musa Manarov U2MIR (left) with Jim

During the past year Jim achieved #1 DXCC Honor Roll - Mixed with 340/350 entities confirmed. His 10-10 number was 7272 received in 1972. He received YLISSB number 8044 in 1969 under his then call sign WB6BHN/VO1.

May he rest in peace

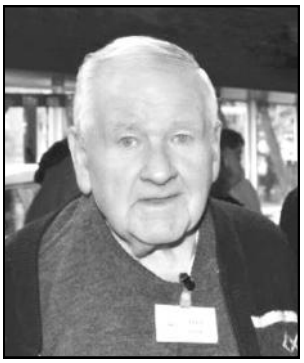
Silent Key
Dolores O'Byrne EI6EPB

The death has occurred on Sunday 4th January 2015 of Dolores O'Byrne EI6EPB**,** suddenly at home in Skerries, Co Dublin. Dolores was active in the late 80's and early 90's. She will be remembered by those who travelled with the DATA group to the West Coast USA in 1989 and also those who participated in Fingal Radio Club's Fox Hunts in north County Dublin in the late 1980's. Dolores will be sadly missed by her brother Charlie EI2EM, her sister-in-law Mary EI2FT, Denise EI3DZB, John family and friends.

To her husband Larry, sons Laurence and Andrew we extend sincerest sympathy.

May she rest in peace

Silent Key
Tom Fay EI6K



The death has occurred of Tom Fay EI6K, Artane, Dublin on Sunday 21st December 2014. Tom is survived by his loving wife Mae, his children and his son Tony EI6EQB. Tom retired in 1992 having worked with the Irish Press in the Wire Room and trained as a Radio Officer in 1948. Tom was a member of North Dublin Radio Club.

May he rest in peace

Silent Key
Cedric Rourke
CT3FT / GI3IVJ / EI6AZ

The death has occurred of Cedric Rourke CT3FT, who lived on Porto Santo near Madeira Island. Cedric grew up in Belfast and was originally licensed in 1953 as GI3IVJ and also held the call sign EI6AZ. As CT3FT he was regularly on the bands and, when talking to GI and EI stations, was always happy to talk about his Irish background.

May he rest in peace

Silent Key
Louis van de Nadort
PA0LOU

The death has occurred of Louis van de Nadort PA0LOU, in hospital, after a short illness. Lou had long been a friend of IRTS, and was appointed as Honorary Member of the Society at our 50th anniversary celebrations in 1982. Lou was the Chairman of IARU Region 1 for 27 years until retirement in 2002. We extend our sincerest sympathy to his wife An and family.

May he rest in peace

Irish Radio Transmitters Society

Annual General Meeting
April 26th 2015
Kilkenny

Members are hereby notified that the Annual General Meeting of the Irish Radio Transmitters Society will be held at 14:00 on Sunday 26th April at Hotel Kilkenny, College Road, Kilkenny.

Committee Nominations

Rule 23.1 requires that the committee shall, at least 28 days prior to the Annual General Meeting, send to all paid-up members a list showing the nominees for the offices of President and Vice-President and eleven committee positions.

The following are the Committee's nominations;

President	Gerry Gervin EI8CC
Vice-President	Jim Holohan EI4HH

Committee

John Owen-Jones	EI1EM
Dennis Drennan	EI2HSB
Pat Fitzpatrick	EI2HX
Dave Court	EI3IO
Seán Donelan	EI4GK
Steve Wright	EI5DD
Paul O'Kane	EI5DI
Brain Canning	EI8IU
Larry McGriskin	EI9CN
Lisa Cummins	EI9GSB
Pat O'Connor	EI9HX

The names of other members eligible and willing to serve as President, Vice-President or as committee members shall be added to the list upon receipt of nominations in writing, by any ten members in the case of a nominee for the Presidency or Vice-Presidency or by any two members in the case of a nominee for any of the eleven committee positions. (Rule 23.2)

Members Advertisements

For SALE: Collins **KWM380** Transceiver SN 648. In mint condition, one owner from new, no scratches or marks, with owners handbook, service manual, and all service bulletins. Fitted with NB and all Xtal filters 6, 2.2 & 1.7kHz, and 360 and 140Hz cw. There is also a spare synthesiser board, PBT board, IF board, digital readout board, and 24 V supply board. Weight 50 lbs. **John EI8AR**, ei8ar@eircom.net or 086 376 2217

For SALE : **Tarheel 300A** Mobile Screwdriver Antenna 200W PEP 160m - 6m 5' whip included, also heavy duty Breedlove solid brass ballmount. €400, €350 without the ballmount. **3x Philips PRM80** 2m ex. PMR programmed with packet & APRS freqs. Ideal for a digi. €20/ea. **Philips FM1000** 4m with PA4DEN s/ware €55 **Gerry EI8DRB** QTHR

For SALE: **Kenwood TM-V71e** 2mt/70cm Transceiver dtmf mike in p.w.o original box manual €280. **Signalink SL-1** €50 or €300 for both. **Joe EI4GX** 083 181 3548

For SALE: **Cushcraft A3S**. Partly disassembled for easy re-assembly. Perfect condition as it has been stored in attic for a few years due to planning permission problems. Used for only two years prior. €450. **Jim EI4HH** 086 407 1185 or QTHR.

For SALE: **MFJ-1788** Magnetic Loop antenna, complete with power supply, mounting bracket & manual. P.W.O. Can deliver Dublin City & County. €150 ono **Chris EI8GFB** daviesthegas@gmail.com or 086 823 9929

For SALE : **MFJ-259** Antenna Analyser 1.8 - 170MHz. As new, with manual. €120. **Trio PF-810** Professional Power and SWR meter. 1.8 - 200MHz in three switched ranges, 5, 25 and 150W, with two switched antenna sockets. As new €95. **Paul EI5DI** 085 128 7216.

Wanted : **Dummy Load**. Would like it to be capable of 150 watts, but will consider less. **Dave EI8KG** dave.ei8kg@gmail.com or 01-282 8418.

IRTS Shop

IRTS Members can avail of a 10% discount on purchases from the RSGB on line shop.

IRTS members should select the **"*Non members Price*"** before placing the order and then enter the special IRTS Discount Code during the checkout process.
At this point the 10% discount will be calculated.

IRTS members who are also RSGB members should continue to select the "*RSGB Member's Price*" and not use the IRTS Discount Code.

The IRTS Discount Code will change from time to time and will be published for members in Echo Ireland.
Currently the Code is:

IRTS2020XWW

The RSGB Shop can be accessed from the link on the IRTS website or at

www.rsgbshop.org

The RSGB Shop stocks a comprehensive range of books on radio and related topics by RSGB and other publishers.

Check it out today!

IRTS Regional Representatives

Regional Representatives act as liaison between members/clubs in their respective regions and the IRTS Committee.
Feel free to contact them if you have any issue to raise or suggestion to make about IRTS or its activities.

	Regional Rep Co-ordinator	**Paul Martin EI2CA**	**087-2523908**	**paul@comma.ie**
1	Dublin - North of the Liffey	Derek McGonagle EI7CHB	01-8491391	derekmcgonagle@hotmail.com
2	Donegal	Jason McGarrigle EI6GRB		ei6grb@dxireland.com
3	Kildare / Laois / Longford / Offaly/ Roscommon / Westmeath	Mark Condon EI6JK		ei6jk@hotmail.com
4	Clare / Kerry / Limerick / Tipperary	Ger McNamara EI4GXB	087-2532512	ei4gxb@gmail.com
5	Cork	Dave Moore EI4BZ	087-6290574	ei4bz@eircom.net
6	Carlow / Kilkenny / Waterford / Wexford	John McCarthy EI8JA		ei8ja@eircom.net
7	Cavan / Louth / Meath / Monaghan	Thos Caffrey EI2JD	087-2953256	thoscaffrey@hotmail.com
8	Galway / Leitrim / Mayo / Sligo	Steve Wright EI5DD	087-2451218	wright14@gmail.com
9	Dublin - South of the Liffey / Wicklow	Jim Holohan EI4HH	086-4071185	holohaj2@hotmail.com
	Outside EI	Tony Casey EI3HA		ei3ha@topmail.ie